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Dr. Rafi Ullah

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IMM-MEDICINE

FCPS-2 & IMM MEDICINE

"If people are doubting how far you can go, go so far that you can't hear them anymore." – Michele Ruiz

"You can either experience the pain of discipline or the pain of regret. The choice is yours." – Unknown

"Don't be pushed around by the fears in your mind. Be led by the dreams in your heart." – Roy T. Bennett

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Dr. Rafi Ullah

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IMM (intermediate module) Exam

- There are 2 papers each containing 100 MCQ's –2 hours for each paper
- Paper-1 is from General Medicine containing 100 MCQ's
- Paper 2 contains 100 MCQ's out of which
  - First 40 questions are from general medicine and Cardiology which are compulsory
  - For the Rest 60 MCQ's you are given a choice of selection of specialties out of which you have to choose 3 of your own choice – each containing 20 MCQ's
  - Choices are
    - Pulmonology
    - Nephrology
    - Neurology
    - Hematology & oncology
    - Gastroenterology
    - Dermatology
- General Tips
  - You can choose any subject/specialty regardless of your Medicine and allied group in which you are currently doing your training
  - Don't forget to take your admit card
  - Your seating arrangement and laptop number will be displayed on a paper on a wall
  - After finding your seat, your roll number and name would be pasted there, along with username and password.
  - Put that username and password and click login
  - Instructions would come after logging in. read it, in the end there would be a small option for start
  - Start when you are asked to, exactly on your time.
  - 2 papers, each of 100 BCQS.
  - Total 100 questions, for each question there would be 5 options, choose the most appropriate.
  - If you are sure about the answer, click it.
  - If you don't know the answer, skip it and it would come in the end, but you can only skip it once
  - Timer would be running in the top right corner of your laptop screen
  - No mobile phones even not a pencil is allowed inside examination hall
  - Tea and launch would be offered in breaks, do have it☺.
  - Try to have proper recalls after paper with all options if possible, so we can continue the help of others and of our coming Juniors
  - Best of luck ☺

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Preface

I am thankful to Almighty Allah who gave me the courage to write this book.

This book is the first ever book containing the most updated CPSP IMM MCQ's pool along with theory from different text books, MRCP notes & Master the board, it's also the very first book containing CPSP TOACS scenarios and all stations explained separately with colored diagrams, pictograms, tables and easy format

This book has been written to meet the needs and requirements of students appearing in FCPS-II medicine and IMM medicine exam.

Passing FCPS or others license examinations is a difficult milestone for many doctors but is a mandatory requirement for career progression. Due to busy schedule of Doctors it is almost impossible to go through all the large textbooks so as to acquire all the knowledge that is required to pass the examinations.

The aim of this book is to provide the busy doctor with a comprehensive review of all the textbooks

This book will help the students in many ways including

- The book is divided into two sections: Theory and TOACS.
- Theory is written chapter wise and topic wise, along with complete theory of that topic on same page----with largest and updated pool of MCQ's in any book
- TOACS section has been further subdivided into exam pattern stations and each station after completing has questions and answers that are asked in real exam—previous CPSP TOACS stations question and answers
- There would be no need to read different books, all the subjects and each and everything will be in this book (will save you the money and time ☺)
- Flow charts, diagrams, and mnemonics for easy and quick revision

- Any suggestions/ corrections would be highly appreciated, or you can send us your paper or any recalls and his/her name will appear in the future edition. For which you can contact us on our page or email ID

Dr. Rafi Ullah

"doctor_rafi@yahoo.com"

Facebook page: Radiant Notes & Lectures

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Chapter: 1 Pulmonology

1. **Which of the following parameters doesn't change in both obstructive and restrictive lung diseases?**
   a. Residual volume
   b. FEV1
   c. PEFR
   d. Tidal volume
   e. Vital capacity

Ans: **D**

2. **PFTs for obstructive lung disease?**
   a. ↓FEV_1, ↑TLC, ↑RV
   b. ↑FEV_1, ↑TLC, ↑RV
   c. ↓FEV_1, ↓TLC, ↓RV
   d. FEV1/FVC increased

Ans: **A**

3. **How will you measure volume and diffusion capacity of each lung separately?**
   a. Timed vital capacity
   b. Vital capacity
   c. Total lung capacity
   d. Differential bronchospirometry

Ans: **D**

4. **Indication for mechanical ventilation depends upon?**
   a. Vital capacity
   b. Confusion
   c. Cyanosis
   d. Unconscious
   e. Irritability

Ans: **A**

5. **Indication for mechanical ventilation?**
   a. PaO2 < 60 mmHg
   b. PaO2 < 55 mmHg
   c. PaO2 < 70 mmHg
   d. PaO2 < 80 mmHg

Ans: **B**

6. **Patient presented to you who is a diagnosed case of asthma, On ABGs his PaO2 is 55 and unconscious, Next best step?**
   a. IV Aminophylline
   b. Mechanical Ventilation
   c. IV Mgso4

Ans: **B**

7. **A chronic smoker presented with recurrent SOB, cough, along with decreased PCO2 and increase residual volume. Diagnosis?**
   a. Emphysema
   b. Asthma
   c. Chronic bronchitis
   d. Acute bronchitis

Ans: **A**

8. **A patient with silent chest, next step?**
   a. Intubation/mechanical ventilation
   b. Increase 0xygen

Ans: A

Radiant Notes

Obstructive Lung Disease	FVC: ↓ or normal FEV1: significantly ↓ FEV1% (FEV1/FVC): ↓ TLC= ↑, RV= ↑
Restrictive Lung Disease	FVC: significantly ↓ FEV1: ↓ FEV1% (FEV1/FVC) - normal or ↑ TLC= ↓

Obstructive Lung Disease	Restrictive Lung Disease
Asthma COPD (emphysema, chronic bronchitis) Bronchiectasis Cystic fibrosis	❖ Poor muscular effort—polio, myasthenia gravis ❖ Poor structural apparatus—scoliosis, morbid obesity ❖ Interstitial lung diseases ▪ Farmer's lung (hypersensitivity pneumonitis/Extrinsic allergic alveolitis) ▪ Ankylosing spondylitis ▪ Sarcoidosis ▪ Silicosis ▪ TB ▪ Bronchiolitis obliterans with organizing pneumonia (BOOP) ▪ Asbestosis ▪ Drugs (nitrofurantoin, hydralazine, INH, amiodarone, methotrexate, many chemo drugs) ▪ Rheumatologic disease (SLE, RA, Scleroderma)

Indication for mechanical ventilation (Ref Medscape)

- ✓ PaO_2 < 55mmHg despite oxygenation
- ✓ $PaCO_2$ ≥50mmHg with pH ≤7.25
- ✓ Vital capacity less than 15mL/Kg
- ✓ Failure of or contraindications to non-invasive ventilation (NIV)
- ✓ Respiratory arrest
- ✓ Depressed consciousness (GCS <8) and hypoxemia
- ✓ Neuromuscular disease

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9. Which one of the following statements is a feature of mechanical ventilation?
a. Increase in right atrial pressure
b. Increase in left atrial pressure
c. Increase in diffusion capacity
d. MAP of pleural space remains unchanged

Ans: **A**

10. Which of the following conditions would be expected to increase the residual volume and total lung capacity of the lung?
a. Bacterial pneumonia
b. Cryptogenic organizing pneumonia
c. Emphysema
d. Idiopathic pulmonary fibrosis
e. Obesity

Ans: **C**

11. A known asthmatic patient, now presents with symptoms of COPD. X-ray finding of hyperinflated lungs. What investigation can be used to differentiate COPD from asthma?
a. FEV1,
b. Peak flow rate
c. FVC1
d. FEV1/FVC1
e. TLCO

Ans: D

12. Asthmatic patient with severe SOB. Next best step is to order?
a. ABGs
b. CXR
c. ECG
d. Echo

Ans: A

13. In case of moderate severe asthma ABGs will show
a. Hypercapnia
b. Hypocapnia
c. Resp. Acidosis
d. Resp. Alkalosis

Ans: **B**

14. Moderately acute severe asthma is characterized by
a. HR≥120/min
b. RR≥30/MIN
c. Pulsus paradoxus >25mmHg
d. Drowsy

Ans: **A**

15. Asthmatic patient admitted in hospital what PEFR value will suggest discharge to home?
a. PEFR> 60%
b. PEFR > 65%
c. PEFR > 70%
d. PEFR >75%
e. PEFR > 80%

Ans: **C**

16. Which of the following parameters is NOT a feature of acute severe asthma?
a. PEFR < 33%
b. Pulse >120
c. RR> 30 min
d. Talking in breaks due to shortness of breath

Ans: **A**

17. Which one of the following fulfil Diagnostic criteria for Exercise induced Asthma?
a. Fall in FEV1 ≥ 10 % after exercise
b. Fall in FEV1 ≥ 15 % after exercise
c. Fall in FEV1 ≥ 20 % after exercise
d. No change in FEV1

Ans: **B**

Radiant Notes

Features	Moderate acute asthma	Severe asthma	Respiratory arrest
Breathlessness	At rest, limits activity	At rest, Interferes with conversation	while at rest, mute
Alertness	Usually agitated	Usually agitated	Drowsy or confused
Respiratory rate	Increased	Often > 30/minute	> 30/minute
Pulse/minute	100-120	>120	Bradycardia
Pulsus paradoxus	May be present	Often present >25mmHg	
PEF	40-70%	<40%	<25%
PaO2	≥ 60	< 60: possible cyanosis	< 60: possible cyanosis
PaCO2	< 42 mm Hg	≥ 42 mm Hg	≥ 42 mm Hg
SaO2	90-95%	< 90%	< 90%

Asthma diagnosis

- Compatible clinical history plus either/or:
  - FEV1 ≥ 15%* (and 200 mL) increase following administration of a bronchodilator/trial of corticosteroids
  - FEV1 ≥ 15% decrease after 6 mins of exercise
  - > 20% diurnal variation on ≥ 3 days in a week for 2 weeks on PEFR diary

PEFR (Ref CMDT)

- FEV1 or PEFR>70%---Discharge
- FEV1 or PEFR 40-59%---Admit in ward
- FEV1 or PEFR <40%---Admit in ICU

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18. A 26 years old guy presents to you with shortness of breath. On detailed history he tells you that he develops this symptom only after exercise. His PEFR was 220 (maximum is 280). Your diagnosis will be
    a. Exercise induced asthma
    b. COPD
    c. Valvular hear disease
    d. Heart failure

Ans: A

19. Young boy who used to developed SOB in summer when pollens are high. What investigation will you do?
    a. Bronchial provocation test
    b. Serial PEFR
    c. Chest X ray
    d. Allergen test

Ans: A

20. A textile mill worker presented in ER with complain of gradual worsening of SOB for the last one year, he says he feels good on holiday. The most appropriate Dx?
    a. Occupational asthma
    b. Allergic asthma
    c. Silicosis
    d. IPF

Ans: A

21. 30-year-old male complains of shortness of breath during his working hours. What is the diagnosis?
    a. COPD
    b. Extrinsic allergic alveolitis
    c. ABPA
    d. Occupational asthma

Ans: D

22. How to monitor severity and response to treatment in bronchial asthma?
    a. Spirometry
    b. PEFR
    c. Residual volume
    d. Vital capacity

Ans: B

23. Investigation of choice to diagnose bronchial asthma
    a. Spirometry with reversibility
    b. Spirometry without reversibility
    c. PEFR
    d. HRCT

Ans: A

24. A 19-year-old boy presents to you with cough for 6 months. You suspect him a case of bronchial asthma. Which of the following points in history will make your diagnosis less likely?
    a. Peripheral tingling during episodes of dyspnea
    b. Chest tightness while exercise
    c. History of allergy
    d. Peripheral blood eosinophilia

Ans: A

25. A 16-year-old boy with nocturnal chest tightness and SOB, examination during day he is normal, test to perform?
    a. Chest x ray
    b. PEFR
    c. ABG
    d. CT chest

Ans: B

26. The value of which of the following remain unchanged in obstructive and restrictive lung disease?
    a. Tidal volume
    b. TLC
    c. FEV1/FVC
    d. Residual volume
    e. Vital capacity

Ans: A

27. A textile mill worker presented in emergency with complain of gradual worsening of SOB for the last one year. He has pets at home. Lab show followings. $\uparrow$TLC, $\downarrow FEV_1/FVC$. He says he feels good on holiday. The most appropriate diagnosis is
    a. Occupational Asthma
    b. Sarcoidosis
    c. Silicosis
    d. Tuberculosis
    e. Idiopathic pulmonary fibrosis

Ans: A

Radiant Notes

Occupational Asthma (10% of adult asthma)
- ✓ No symptoms on first exposure but begin days, months or even years later
- ✓ Serial measurements of peak expiratory flow are recommended at work and away from work

Vaccination in all asthma & COPD patients
- ✓ All patients with asthma should receive a pneumococcal vaccination & yearly influenza vaccination.

PEFR:
- ✓ Monitor the progress of disease and its treatment in bronchial asthma and COPD

Spirometry with reversibility
- ✓ is used to diagnose bronchial asthma

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Pulmonology

28. A 26-year-old male with chest tightness. Wheeze and SOB presents to you. On detailed history. He tells that he has these symptoms while during working hours and feels much better in the evening. Best test to diagnosis

a. PEFR
b. CXR
c. Methacholine challenge test
d. Spirometry with reversibility

Ans: **A**

29. An asthmatic patient previously controlled on salbutamol, he presented again with SOB what will you add now in his treatment?

a. Oral Corticosteroids
b. IV Corticosteroids
c. Inhaled Corticosteroids
d. No change in his medications
e. Reassurance

Ans: **C**

30. An asthmatic patient presented to you in ER with acute exacerbation, how will you manage first?

a. IV corticosteroids
b. Nebulize with salbutamol
c. Nebulize with corticosteroids
d. Oral corticosteroids

Ans: **B**

31. A patient comes to you with SOB. She is already a diagnosed case of Bronchial asthma, taking only inhaled salbutamol. Now she has increased frequency of symptoms. Next appropriate step is

a. Inhaled corticosteroids
b. IV corticosteroids
c. Aminophylline
d. Leukotriene receptor antagonists

Ans: **A**

32. Correct regarding spirometry?

a. It depends upon age, sex, weight but no ethnicity
b. It depends upon age and weight only
c. It depends upon age, sex, weight and ethnicity
d. It depends upon weight and height only
e. It is independent of variable test

Ans: **C**

33. A middle-aged woman was being diagnosed as a case of bronchial asthma on the basis of PFTs. But here respiratory and cardiovascular work up was unremarkable. What do you think will be the cause of her symptoms?

a. Anxiety
b. GERD
c. Psychogenic
d. Treatment failure

Ans: **B**

34. A 36-year-old asthmatic patient present to you with retrosternal chest pain to chest OPD. CXR, ECG and ECHO were normal. What is your diagnosis?

a. GERD
b. COPD
c. ACS
d. Pericarditis

Ans: **A**

35. Which one of the following treatments is mandatory in severe asthma?

a. IV salbutamol
b. IV steroids
c. High flow oxygen
d. Theophylline
e. Magnesium

Ans: **B**

36. Asthma patient with worsening of symptoms causing awaking at night 3 times per month, treatment?

a. Salbutamol
b. Salbutamol plus steroids
c. Oral steroids

Ans: **B**

Radiant Notes

<u>Asthma treatment (Step wise approach)</u>

Step 1:
- ✓ Inhaled short-acting B2 agonist as required

Step 2
- ✓ Add inhaled steroid at 200-800 mcg/day

Step 3:
- ✓ Add inhaled long-acting B2 agonist (LABA) then Assess control of asthma
  - Good response to LABA -- continue LABA
  - Benefit from LABA but control still inadequate ---continue LABA and increase inhaled steroid dose to 800 mcg/day
  - If control still inadequate, institute trial of other therapies--- leukotriene receptor antagonist or SR theophylline

Step 4
- ✓ Consider trials of increasing inhaled steroid up to 2000 mcg/day
- ✓ Addition of a fourth drug e.g. Leukotriene receptor antagonist, SR theophylline,

Step 5
- ✓ Use daily steroid tablet in lowest dose providing adequate control.
- ✓ Maintain high dose inhaled steroid at 2000 mcg/day
- ✓ Refer patient for specialist care

<u>Associated condition with Asthma</u>

- ✓ <u>**GERD**</u>--- can cause cough and wheezing in some patients and may benefit from treatment with H2 blockers or proton pump inhibitors

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37. Young patient presented to you in your OPD with complains of recurrent episodes of SOB and nocturnal cough. On examination his respiratory system and CVS examination is normal. Among the following which other tests might be useful?
a. CXR
b. Sputum c/s
c. IgE levels
d. PEFR

Ans: **D**

38. A young boy comes to you in chest clinic with chronic dry cough. His chest examination is normal. What is your diagnosis?
a. ABPA
b. Emphysema
c. Chronic bronchitis
d. Bronchial asthma
e. Tropical eosinophilia

Ans: **D**

39. A 57-year-old asthmatic female who has been previously treated for ABPA presents to you in emergency department with an exacerbation of the disease. Which, among the following therapies, will be best for her
a. Oral glucocorticoids
b. Nebulization with salbutamol
c. Nebulization with ipratropium
d. IV aminophylline
e. Inhaled steroids

Ans: **A**

40. A 25-year-old male was admitted in your ward with acute SOB. He works in a barley farm. What do you think he might have?
a. Hypersensitivity pneumonitis
b. Hypersensitivity eosinophilia
c. ABPA
d. Asthma

Ans: **A**

41. Farmer lung is seen in
a. Mouldy hay
b. Cheese
c. Wine
d. Sugar cane

Ans: **A**

42. Pneumoconiosis is secondary to
a. Iron particles
b. Coal-Dust particles
c. Silica particles

Ans: **B**

43. A 63-year-old patient with known allergic bronchopulmonary aspergillosis presents to the ER with an exacerbation. Which of these therapies represents the most appropriate management?
a. Nebulized salbutamol
b. Intravenous voriconazole
c. Nebulized ipratropium bromide
d. Oral glucocorticoids

Ans: **D**

44. A person working in wool factory, disease?
a. Byssinosis
b. Farmer lung
c. Asbestosis

Ans: **A**

Radiant Notes

Allergic bronchopulmonary aspergillosis
- ✓ Pulmonary hypersensitivity disorder caused by allergy to fungal antigens
- ✓ It usually occurs in atopic asthmatic individuals who are 20-40 years of age
- ✓ **IgE levels more than 1000 IU/mL or 417 KU/L are hallmark of ABPA**

Hypersensitivity Pneumonitis (aka Extrinsic allergic alveolitis)

Disorder	Source	Antigen/Agent
Farmers lung	**Mouldy hay**	Micropolyspora faeni Aspergillus fumigatus **Saccharopolyspora rectivirgula**
Bird fancier's lung	Avian excreta, proteins and feathers	Avian serum proteins
Byssinosis	Textile industries	Cotton, flax, hemp dust
Malt workers		**Aspergillus clavatus**

Investigation:
- chest x-ray: upper/mid-zone fibrosis
- Broncho alveolar lavage (BAL): lymphocytosis
- blood: NO eosinophilia

Treatment:
- Remove exposure to causative agent, give oxygen if needed
- In severe acute or protracted cases, oral corticosteroids (prednisone, 0.5 mg/kg daily as a single morning dose for 2 weeks, tapered to nil over 4-6 weeks

Differentiating points

Disease	IgE level	Eosinophils	Therapy
ABPA	**Increased**	Increased >10%	Steroids + Itraconazole
Hypersensitivity pneumonitis	Normal	**Normal**	Remove offending agent
Churg Strauss syndrome	Normal	Increased >10%	Steroids

Pulmonology

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45. Regarding farmer lung

a. Present as asthma
b. Spirometry shows obstructive pattern
c. Treatment requires antibiotics
d. Damage is irreversible
e. Cause by immune response to animals' protein

Ans: E

46. Patient having animal exposure and now breathless and had bilateral infiltrates on CT scan, best to do

a. Stop his exposure
b. Nebulized salbutamol

Ans: A

47. A grain worker with progressive SOB. CXR showing bilateral opacities sparing lower zones. Dx?

a. Bagassosis
b. Silicosis
c. Farmers lung

Ans: C

48. A patient who is a known case of asthma, laboratory tests done, which of the following lab finding is consistent with ABPA

a. Eosinophils > 7%
b. Elevated serum IgE >1000
c. Elevated WBCs
d. Anemia
e. Elevated serum glucose

Ans: B

49. A shopkeeper presents with c/o dry cough and dyspnea on exertion. He has crackles all over the chest on examination he has B/L wheeze now. Which factor is important during history taking?

a. Exposure to birds
b. Smoking
c. Biomass
d. Dust allergy

Ans: A

50. Shopkeeper with SOB and dry cough. On examination of chest there were fine crackles, what would you inquire about?

a. Pets at home.
b. Food intake
c. Weight control
d. Fever

Ans: A

51. A 55-year-old male presents to you with dry cough for last 2 weeks. He had history of recurrent attacks of asthma, fever, weight loss and severe joint pains for last 6 months. His CBC shows Hb=11.6 TLC=12000, with poly 60%. Lymphocytes 20%, and Eosinophils 20% CXR reveals bilateral fluffy shadows. What is the most likely diagnosis?

a. Tropical eosinophilia
b. Churg Strauss syndrome
c. ABPA
d. Idiopathic pulmonary fibrosis
e. Sarcoidosis

Ans: B

52. A 30-year-old female with history of bronchial asthma for 7 years. Her CXR shows bilateral fluffy shadows which improve with treatment. Serum IgE=1345 IU. What is your most likely diagnosis?

a. Churg Straus syndrome
b. Extrinsic allergic alveolitis
c. Pneumonia
d. ABPA
e. Eosinophilic pneumonia

Ans: D

53. Patient went to his village after a long time presented with shortness of breath, on examination wheezing & labs shows leucocytosis with neutrophilia, diagnosis

a. Churg Straus syndrome
b. Extrinsic allergic alveolitis
c. Pneumonia
d. ABPA

Ans: B

54. 12-year-old child presents with cough and wheezing for last 7 years .x-ray showed bilateral bronchiectasis exam shows thick sputum containing eosinophils most likely cause is

a. Aspergillosis
b. Bronchial asthma
c. Cystic fibrosis
d. Hay fever

Ans: A

- ✓ Its Allergic pulmonary complication manifested by 10% of cystic fibrosis patients called Allergic Aspergillosis syndrome.
- ✓ Its characterized by following features:
- ✓ >Thick brown mucus production
- ✓ > Wheezing shortness of breath low grade fever
- ✓ > Elevated Serum Ig E
- ✓ Eosinophilic infiltration of Alveoli

54. ABPA Investigation?

a. Blood culture
b. Urine culture
c. CBC
d. Sputum for fungal hyphae

Ans: D

Radiant Notes

Hints

- ✓ **Smoking and biomass ----COPD**
- ✓ **Dust allergy -----asthma**
- ✓ **Exposure to birds --- ILD**

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55. 55-year-old smoker with a 20-pack year history presented to you with complain of SOB. PFTs were advised showing FEV1=1.4L (predicted 3.3L). FVC=1.7L (predicted 4.5L) FEV1/FVC32% (normal>75%). Your diagnosis?
    a. Asthma
    b. COPD
    c. Bronchiectasis
    d. Bronchiolitis obliterans

Ans: B

56. A diagnosed case of COPD patient when established Cor-pulmonale, its definite treatment will be
    a. Antibiotics
    b. Physiotherapy
    c. Vaccination
    d. Long term domiciliary 02 therapy

Ans: D

57. A 58-year-old COPD patient presents to you in emergency department with sever SOB. He was given IV steroids, antibiotics, and frequent nebs, but no response, Finally IV aminophylline started. After some time, ABGs @ 2 litre of O_2----shows pH=7.30, pCO_2=56mmHg, PO_2=66mm Hg? What will be your best next action?
    a. Non-invasive ventilation
    b. IV Mgso4
    c. Invasive ventilation
    d. Repeat dose of aminophylline

Ans: A

58. You are being working as a house officer in pulmonology ward. You received a call from medical unit that a known COPD patient had developed type 2 respiratory failure. You went to receive the call and noticed that the patient is very acidotic. What will be your next best step?
    a. IV aminophylline
    b. Continue same treatment
    c. Non-invasive ventilation
    d. Mechanical ventilation
    e. Taper O_2 to 1-2 Lit/min

Ans: E

59. Known COPD with acute exacerbation. On ABGs his pH 7.30, PCo2 88mmHg, what treatment would give him the most benefit?
    a. Lower oxygen
    b. Increase Oxygen
    c. Non-invasive ventilation
    d. Steroids

Ans: C

60. Oxygen through Nasal canula in patient with type-2 respiratory failure:
    a. 1-2 litre
    b. 2 - 3 litres
    c. 4 - 5 litres
    d. 5 - 6 litre

Ans: B

61. COPD patient having respiratory acidosis, what treatment would be most effective?
    a. Oxygen inhalation at 1-2L/min
    b. Oxygen inhalation at 2-3L/min
    c. Oxygen inhalation at 4-5L/min
    d. Keep O2 saturation more than 95%

Ans: B

62. A 60-year-old male with 20 pack year history has complain of continuous cough with copious amount of sputum for last 2 years. What do you think his most likely diagnosis will be?
    a. Bronchial asthma
    b. Bronchiectasis
    c. Lung abscess
    d. Chronic bronchitis
    e. Empyema

Ans: D

63. A smoker patient presented with fever, cough with sputum for last 3 months what is most likely Dx?
    a. Bronchitis
    b. Bronchiectasis
    c. COPD

Ans: A

Radiant Notes

COPD Treatment

- ✓ Smoking cessation---alternative are nicotine gum and bupropion
- ✓ Long term oxygen therapy (LTOT) to prevent Cor-pulmonale and decreased mortality----at least 15 hours/day at 2–4 L/min
- ✓ Co2 retainers ----Maintain O2 Sat between 88-92% to prevent Haldane effect, worsening V/Q mismatch, and decreased respiratory drive

Chronic bronchitis

- ✓ Defined by excessive secretion of bronchial mucus and is manifested by daily productive cough for 3 months or more in at least 2 consecutive years.

Emphysema

- ✓ Abnormal permanent enlargement of air spaces distal to the terminal bronchiole, with destruction of their walls and without obvious fibrosis
- ✓ Centriacinar
  - Typical form seen in smokers,
- ✓ Panacinar
  - α1-antitrypsin deficiency

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64. Known COPD with acute exacerbation. On ABGs his Pa02 is 12Kpa and PCo2 8kpa, what treatment would give him the most benefit?

a. Lower oxygen
b. Increase Oxygen
c. Non-invasive ventilation
d. Steroids

Ans: A

65. Regarding CO_2 narcosis, which of the following statements is true?

a. Unrelated to COPD
b. Causes hepatic encephalopathy
c. Improves restriction
d. Oxygen inhalation worsens it

Ans: D

66. Following is not the risk factor for COPD?

a. Low socioeconomic status
b. Cadmium
c. Aniline dyes
d. Smoking
e. Alpha 1 antitrypsin deficiency

Ans: C

67. A middle-aged man presents to you in emergency department with bilateral leg swelling. She tells that swelling has been increased with the passage of time. On examination, she has bilateral edema upto the legs. CXR shows enlarged right heart border. What could be the reason?

a. Thromboembolism
b. Chronic Asthma
c. Cor Pulmonale
d. Sarcoidosis

Ans: C

68. Gold standard test for cor-pulmonale:

a. ECG
b. CXR
c. Echo
d. Cardiac catheterization
e. MRI chest.

Ans: D

69. Pursing of lips in COPD patient helps

a. Prevent atelectasis
b. Increase flow of air
c. Decrease atmospheric pressure
d. Hypercapnia

Ans: A

70. Clubbing is not a feature of

a. Lung abscess
b. Mesothelioma
c. Bronchial carcinoma
d. COPD
e. Cystic fibrosis

Ans: D

71. Regarding chronic obstructive pulmonary disease

a. Smoking is the single most important factor
b. Lifelong treatment is required
c. Right heart failure is common
d. Cause destruction of lung parenchyma
e. Reverse with bronchodilator

Ans: A

72. Regarding COPD, which of the following reduces mortality:

a. Smoking cessation
b. Reduce weight
c. Avoid pollution

Ans: A

Radiant Notes

Step wise management of COPD

✓ Step-1: Inhaled short-acting B2 agonist
✓ Step-2: Inhaled long-acting B2 agonist
✓ Step-3: Inhaled long-acting B2 agonist+ anticholinergics
✓ Step-4: consider theophylline
✓ Step-5: LABA + Inhaled corticosteroids
✓ Surgical options:
  - Lung transplant
  - Lung volume reduction surgery (LVRS) or reduction pneumoplasty in emphysema

Management of Acute exacerbation of COPD

✓ Oxygen therapy:
  - Control oxygenation with the aim of maintaining a PaO2 > 8 kPa (60 mmHg) (or a SaO2 > 90%) without worsening acidosis.

✓ Bronchodilators
  - Nebulised short-acting β2 -agonists combined with an anticholinergic agent (e.g. salbutamol with ipratropium) should be administered

✓ Corticosteroids
✓ Antibiotic therapy
✓ Non-invasive ventilation—if patent remains tachypnoeic and acidotic despite above measure ---followed by invasive ventilation

❖ **The single most important intervention in smokers with COPD is to encourage smoking cessation**

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73. A smoker died; his autopsy of bronchi showed mucosal gland enlargement. Likely underlying disease?
   a. Bronchiectasis
   b. Sarcoidosis
   c. Tuberculosis
   d. Chronic bronchitis

Ans: **D**

74. The mucus seen in Chronic bronchitis patient is derived from which of the following cell types?
   a. Alveolar macrophages
   b. Goblet cells
   c. Neuroendocrine cells
   d. Type I pneumocyte

Ans: **B**

75. FEV1 45%, indicates which GOLD stage for COPD
   a. Stage 1 Mild
   b. Stage 2 Moderate
   c. Stage 3 Severe
   d. Stage 4 Very Severe

Ans: **C**

76. Hypercapnia is a typical feature of:
   a. Pulmonary embolism.
   b. Salicylate intoxication.
   c. Pulmonary fibrosis.
   d. Severe chronic bronchitis

Ans: **D**

77. A known COPD patient not controlled on medications what will you give for long term control?
   a. Steroid
   b. Salbutamol
   c. Antibiotics
   d. LTOT

Ans: **D**

78. Regarding COPD, most effective method in reducing mortality?
   a. High flow oxygen therapy
   b. Smoking cessation
   c. Pneumococcal vaccination
   d. Bronchodilators

Ans: **B**

79. COPD patient, symptoms not controlled on SABA, his FEV1 is 55%, next management step:
   a. Add oral corticosteroids
   b. Add LABA
   c. Add Leukotriene receptor antagonists
   d. Add LTOT therapy

Ans: **B**

80. Lung volume reduction surgery is best in patients with
   a. Upper lobe emphysema
   b. Lower lob emphysema
   c. COPD
   d. Asthma
   e. Bronchiectasis

Ans: **A**

81. Risk factor for emphysema
   a. Nicotine
   b. Carbon black
   c. Female gender
   d. Young age

Ans: **B**

82. Industry worker with progressive SOB for 2 years. Inc lung volumes pCO2 normal.
   a. Emphysema
   b. Asthma
   c. Silicosis
   d. Sarcoidosis
   e. Tuberculosis

Ans: **A**

83. Most important difference between pleural effusion and consolidation is
   a. Loss of costophrenic angle
   b. Air bronchogram
   c. Percussion note
   d. Effusion always localized to dependant part
   e. Chest movements

Ans: **B**

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Pulmonology

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Pulmonology

84. Most Common cause of bronchiectasis overall

a. Recurrent infection
b. Smoking
c. alpha 1 antitrypsin deficiency
d. Cystic fibrosis
e. hypogammaglobulinemia

Ans: D

85. Best treatment for bronchiectasis?

a. Antibiotics
b. Postural drainage
c. Antibiotics plus postural drainage

Ans: C

86. A middle-aged housewife complains of productive cough. On examination she has clubbing and bilateral coarse crepitation. What is your most likely diagnosis?

a. Pneumonia
b. ILD
c. Bronchiectasis
d. Lung abscess

Ans: C

87. 1-year old child with recurrent chest infections and now presented with hemoptysis, Diagnosis?

a. ABPA
b. Silicosis
c. Acute interstitial pneumonia
d. Bronchiectasis
e. Abscess

Ans: D

88. A 27-year-old patient with pulmonary TB, had now developed tram track appearance on CXR, what is the most likely diagnosis?

a. Bronchiectasis
b. ABPA
c. Silicosis
d. Acute interstitial pneumonia
e. Abscess

Ans: A

89. A patient with features conjunctivitis, pleural effusion, erythema nodosum, thin walled cavitatory lesion

a. Aspergilloma
b. TB
c. Coccidioidomycosis
d. Sarcoidosis

Ans :D

90. A female patient presents with repeated chest infections, cyanosis, clubbing and breathlessness for 3 years. To diagnose her condition which investigation is needed:

a. Arterial blood gasses
b. High resolution CT scan
c. Chest X ray
d. ECG
e. Thoracoscopy

Ans: B

91. Basal course crepitation on inspiration and expiration are heard in:

a. Bronchiectasis
b. Pleural effusion
c. Pulmonary fibrosis
d. Pneumonia
e. ARDS

Ans: A (Ref: Diseases in Critical Care Medicine By Burke A. Cunha page: 106)

Radiant Notes

Bronchiectasis

- Irreversible dilatation of airways due to inflammatory destruction of airway walls

Causes:

- Cystic fibrosis (most common)
- Infections (Post tb, pneumonia, abscess
- Primary ciliary dyskinesia
- Kartagener syndrome (characterized by bronchiectasis + sinusitis + situs inversus)
- Pan hypogammaglobulinemia

Clinical features

- Chronic Cough
- Haemoptysis
- Copious, foul-smelling, purulent sputum is characteristic.
- Associated with Fever, clubbing, weight loss, Halitosis (Bad breath

Investigation

- PFTs: often demonstrate obstructive pattern but may be normal
- CXR
  - Nonspecific: increased markings, linear atelectasis, loss of volume in affected areas
  - Specific: **"tram tracking"** – parallel narrow lines radiating from hilum, cystic spaces, honeycomb like structures
- **High-resolution CT (diagnostic, gold standard)** -----"signet ring cells":

Treatment:

- Chest physiotherapy with postural drainage
- Antibiotic therapy:
- Surgery ---excision of bronchiectactic areas
- Bronchoscopy if haemoptysis not resolved with medical therapy--- May require embolization of bronchial arteries or surgical resection.

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92. A female patient presents to you with complain of dry cough and SOB for four weeks. Her CT chest shows lower lobe fibrosis. PFTs were done showing restrictive pattern. What is your diagnosis?
    a. Fibrosing alveolitis
    b. Extrinsic allergic alveolitis
    c. Sarcoidosis
    d. Histiocytosis

Ans: **A** (Idiopathic pulmonary fibrosis (IPF. previously termed cryptogenic fibrosing alveolitis)

93. A 60 years old female with progressive and gradual worsening of SOB, presents to you, in OPD. On examination, she had clubbing with bilateral crepts in lower zones. She has no history of pets. Birds' exposure or occupational hazards. Spirometer shows restrictive patterns. What in your diagnosis?
    a. COPD
    b. IPF
    c. Tuberculosis
    d. Bronchial asthma

Ans: **B**

94. An old patient presented to you with SOB and dry cough, which are progressive for the last 1 year. On examination, you find clubbing and inspiratory crackles. On detailed history. he gives no exposure to birds and dust. what is the most likely diagnosis?
    a. Pneumonitis
    b. Pulmonary edema
    c. COPD
    d. IPF

Ans: **D**

95. Honey comb appearance in lung is seen in
    a. ILD
    b. Pneumonia
    c. Tuberculosis
    d. Sarcoidosis

Ans: **A**

Radiant Notes

Idiopathic Pulmonary Fibrosis (IPF)

- It is **the most common and most important** type of idiopathic interstitial pneumonia
- It is characterized by pathologic pattern called **"Usual Interstitial Pneumonia (UIP)"**
- Clinical features:
    - Dyspnea, especially on exertion
    - Non-productive cough
    - Crackles (dry, fine, end-inspiratory)
    - Clubbing
    - Features of cor-pulmonale
- Investigations
    - PFTs---Restrictive pattern
    - Chest X-ray
    - HRCT
        - Ground glass appearance initially and honeycomb lung appearance in advanced disease
- Lung biopsy (in selected cases---where the diagnosis is uncertain)
    - Transbronchial lung biopsy
        - (Note that the diagnosis of IPF cannot be confirmed on Transbronchial lung biopsy since the histologic diagnosis requires a pattern of changes rather than a single pathognomonic finding.
        - Transbronchial biopsy may exclude IPF by confirming a specific alternative diagnosis

Pulmonology

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Pulmonology

96. *A 30 years old Negro female presents to you with fever and arthralgia. She also has a rash on right side of shin. CXR shows bilateral symmetrical hilar lymphadenopathy. What in the most likely diagnosis*
    a. Histoplasmosis
    b. SLE
    c. TB
    d. Sarcoidosis
    e. Carcinoma

Ans: D

97. Good prognostic factor in sarcoidosis?
    a. Lupus pernio
    b. Splenomegaly
    c. Presence of erythema nodosum
    d. Sudden onset

Ans: C

98. A patient presents to you in OPD with bilateral parotid glands swelling. On examination of chest, bilateral basal crypts were present. Neurological examination was normal. Your diagnosis is associated with
    a. Mumps
    b. Sarcoidosis
    c. Lymphoma
    d. Histoplasmosis
    e. Tuberculosis

Ans: B

99. Female of middle age presented with B/L parotid swelling and hemoptysis, likely diagnosis in this patient
    a. Sarcoidosis
    b. Crohn's disease
    c. Mumps
    d. SLE
    e. Rheumatoid arthritis

Ans: A

100. Patient presented with Fever, parotid enlargement, facial nerve palsy. What could be underlying pathology?
    a. Bronchiectasis
    b. Chronic bronchitis
    c. Sarcoidosis
    d. Silicosis
    e. Tuberculosis

Ans: C

101. Patient complains of red burning sensation, skin rash and on x-ray there is bilateral lymphadenopathy, Diagnosis?
    a. Sarcoidosis
    b. Chronic bronchitis
    c. Silicosis
    d. Bronchial adenoma

Ans: A

102. A patient presented in OPD with bilateral hilar lymphadenopathy and dark spots on retina along with red eye, what specific investigation would you run to reach the diagnosis?
    a. Serum ACE levels
    b. Chest X-RAY
    c. Fundoscopy
    d. Transbronchial biopsy
    e. CT chest

Ans: D

Radiant Notes

<u>Sarcoidosis</u>

✓ Sarcoidosis is a multisystem granulomatous disorder of unknown aetiology that is characterised by the presence of non-caseating granulomas

Manifestation:

<u>Lungs (most common):</u>
- Usually asymptomatic
- **B/L hilar lymphadenopathy**

<u>Skin:</u>
- **Erythema nodosum**---painful purplish nodules usually occurring on shins
- **Lupus pernio**

<u>Eye:</u>
- **Anterior or posterior uveitis**
- Sicca syndrome

<u>Lofgren's syndrome:</u>
- Fever, erythema nodosum, bilateral hilar lymphadenopathy, arthralgias

<u>Heerfordt-Waldenstrom syndrome:</u>
- Fever, parotid enlargement, anterior uveitis, facial nerve palsy

<u>Investigations</u>
- CXR
- ACE levels (disease severity)
- HRCT
- Bronchoalveolar lavage
- Tissue biopsy/transbronchial biopsy <u>(Diagnostic)</u>

<u>Treatment:</u>
- Patients with BHL alone don't need treatment as most recover spontaneously.
    - If the disease is not improving spontaneously 6 months after diagnosis start steroids
- For Acute disease: Bed rest and NSAIDS
- <u>**Indication for steroids:**</u>
    - Parenchymal lung disease (symptomatic, static, or progressive)
    - Uveitis
    - Hypercalcaemia
    - Neurological or cardiac involvement

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103. Patient diagnosed as sarcoidosis. On X ray there is Bilateral lymphadenopathy with clear lung fields, which statement is true regarding this presentation?
a. Good prognosis of sarcoidosis as stage I
b. Good prognosis of sarcoidosis as stage II
c. Bad prognosis as B/L lung hilar lymph nodes involved

Ans: **A**

104. Which of the following is the most useful investigation for sarcoidosis?
a. Increased ACE levels
b. Chest X-RAY
c. Transbronchial biopsy
d. CT chest

Ans: **C** (Sometimes only lymph node biopsy is given)

105. A young female presents with bilateral hilar lymphadenopathy and erythema nodosum. The most likely diagnosis is:
a. Tuberculosis
b. Lymphoma
c. Sarcoidosis
d. Bronchogenic carcinoma

Ans: **C**

106. Patient has conjunctivitis along with erythema nodosum and pleural effusion. These features likely seen in?
a. Sarcoidosis
b. Tuberculosis
c. Coccidioidomycosis
d. Pneumonia

Ans: **A**

107. A 45-year-old man is noted to have bilateral hilar lymphadenopathy on chest x-ray. Which one of the following is the least likely cause?
a. Amyloidosis
b. Sarcoidosis
c. Histoplasmosis
d. Tuberculosis

Ans: **A**

108. A 24-year-old women presents with dyspnea on exertion, fever and rash on her legs. Her symptoms have started gradually and she reports no pleuritic chest pain, hemoptysis and sputum production. Examination revels generalized lymphadenopathy and tender erythematous nodules on her legs. Chest Xray shows bilateral hilar lymphadenopathy and reticulonodular shadows. Most likely diagnosis is:
a. TB lung
b. Sarcoidosis
c. Lymphoma
d. Infectious mononucleosis
e. Bronchial carcinoma

Ans: **B**

109. Regarding sarcoidosis:
a. Antibiotics are the treatment
b. 90% cases cause lung involvement
c. Renal involvement is good prognostic sign
d. Corticosteroids are not required for ocular disease
e. More common in males

Ans: **B**

110. Patient has conjunctivitis along with erythema nodosum and pleural effusion?
a. Sarcoidosis
b. Tuberculosis
c. Coccidioidomycosis

Ans: **A**

111. Patient presented with low grade fever arthralgia and cough for 3 months. ESR 80mm/hr. B/L shins nodules, CXR B/L mediastinal widening, Diagnosis?
a. Tuberculosis
b. Acute Sarcoidosis
c. Interstial lung disease

Ans: **B**

112. Scenario of Sarcoidosis with Bilateral Hilar Lymph node enlargement, definitive diagnosis is by?
a. ACE levels
b. Transbronchial Biopsy
c. Bronchoalveolar Lavage

Ans: **B**

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113. Most common manifestation of cystic fibrosis is:
- a. Malabsorption
- b. Recurrent pneumonia
- c. Diabetes
- d. Vascular disease
- e. Heart disease

Ans: A

114. Diagnostic test for cystic fibrosis
- a. DNA analysis
- b. Sputum AFB
- c. Sweat chloride test
- d. Chest X-ray

Ans: C

115. Child with recurrent infections, sweat chloride content is high. Which one of the following will be most likely present in this patient?
- a. Steatorrhea
- b. Malabsorption
- c. Infertility due to immotile sperms
- d. Dextrocardia

Ans: B

116. 18-year-old boy with lethargy showing increased sodium content in sweat. what others sign will be there?
- a. Dextrocardia
- b. Infertility due to immotile perms
- c. Bowel ischemia

Ans: B

117. An infant is being evaluated for possible cystic fibrosis. The sweat test will show an elevation of which electrolyte?
- a. Chloride.
- b. Fluoride.
- c. Potassium.
- d. Calcium

Ans: A

118. Treatment for cystic fibrosis?
- a. Ceftazidime
- b. Tobramycin
- c. Ampicillin
- d. Streptomycin

Ans: A

119. Which of the following is most likely associated with cystic fibrosis in adult patient?
- a. Rectal polyps
- b. Spontaneous remission
- c. Hemoptysis
- d. Normal exocrine function

Ans: C

120. In Cystic Fibrosis Organism to colonise in long term
- a. Streptococcus
- b. Pseudomonas
- c. H. influenza

Ans: B

121. Recurrent lung infection, chloride sweat test positive, also having steatorrhea, will cause deficiency of
- a. Vitamin D
- b. Vitamin B12
- c. Vitamin B6
- d. Vitamin C

Ans: A

Radiant Notes

Cystic Fibrosis

- CF is a multisystem disorder that results in altered content of exocrine gland secretions
- **Features: (mnemonic CF PANCREAS**
  - Chronic respiratory diseases occur
  - Failure to thrive, poor weight gain
  - Pancreatic exocrine and endocrine insufficiency.
  - Autosomal recessive inheritance.
  - Neonatal intestinal obstruction, meconium ileus, intussusception, volvulus
  - Clubbing of fingers, Cholestasis, biliary Cirrhosis
  - Rectal prolapse
  - Electrolyte excess in sweat like sweat Na+ and Cl-
  - Azoospermia and infertility
  - Staph aureus and pSeudomonas in sputum, Salty sweat
- Diagnosis requires:

Any of the Following	Plus, Any of the Following
○ Typical clinical features ○ History of a sibling with CF ○ Positive new-born screen	○ Sweat chloride test: ▪ Two increased sweat chlorides on 2 separate days (**>60 mmol/L is positive for CF)** ○ CFTR gene mutation ▪ Identification of 2 CF mutations (homozygous) ○ Increased nasal potential difference

Treatment:
- Chest physio
- Antibiotics (**S. aureus and Pseudomonas aeruginosa are most common organisms)**
- Inhaled bronchodilators
- **Definitive treatment: Lung transplantation**

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122. Succussion splash is seen in?
a. Pleural effusion
b. Hydropneumothorax
c. Lung abscess
d. Pulmonary infarction

Ans: B

123. The most common cause of primary spontaneous pneumothorax?
a. Rupture of blebs
b. TB
c. Emphysema
d. Chronic COPD

Ans: A

124. The most common cause of secondary spontaneous pneumothorax is
a. Asthma
b. COPD
c. ILD
d. Sarcoidosis

Ans: B

125. A young female with some history of trauma presents to you in emergency department with surgical emphysema on anterior and lateral side of right side of chest. There are decreased chest movements and absent breath sounds on the right side. Her BP=80 systolic, Pulse=134. Your diagnosis will be:
a. Pleural effusion
b. Tension pneumothorax
c. Pericardial effusion
d. Cardiac tamponade

Ans: B

126. A chronic smoker with 20 pack year history of smoking presents to you in ER department with sudden onset of SOB. And sever chest pain on right side. CXR shows pneumothorax. Plan to do?
a. IV antibiotics
b. Ventilation
c. Nebulization with salbutamol
d. Chest tube

Ans: D

127. Investigation of choice to diagnose pneumothorax?
a. U/S chest
b. CT chest
c. PFTs
d. CXR

Ans: D

128. A 20-year tall and thin lean male complains of sudden chest pain on right side. Examination reveals absent breath sounds on right side. What is your diagnosis?
a. Pleural effusion
b. Pneumothorax
c. Pulmonary edema
d. Pneumonia

Ans: B

129. Best test for a tall male with sudden shortness of breath?
a. CXR
b. PFTs
c. CT scan
d. HRCT

Ans: A

Radiant Notes

Pneumothorax
- Accumulation of air in pleural space
- Unilateral chest pain and dyspnea, unilateral chest expansion
- ↓ tactile fremitus (only increased in consolidation e.g. pneumonia), hyper resonance
- Diminished breath sounds, all on the affected side.

Primary Spontaneous
- Due to rupture of apical blebs or cysts. Occurs most frequently in tall, thin, young males.

Secondary Spontaneous
- Due to diseased lung (e.g., bullae in emphysema, infections), mechanical ventilation with use of high pressures → barotrauma.

Traumatic Pneumothorax
- Caused by blunt (e.g. rib fracture) or penetrating (e.g., gunshot) trauma

Tension Pneumothorax
- Can be any of the above.
- Air enters pleural space but cannot exit.
- Increasing trapped air → tension pneumothorax.
- Trachea deviates away from affected lung

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Pulmonology

130. A 22-year-old tall young man presents to you with pleuritic chest pain. He has neither productive cough nor SOB. No significant past medical and surgical history. CXR shows a right sided pneumothorax with 1.5cm rim of air with no mediastinal shift. He was vitally stable. What will be your best next step in the management of this patient?
a. Discharge with CXR on OPD basis
b. Aspiration
c. Admit and observe for next 24-48 hours
d. Insert 14G canula into 2nd intercostal space

Ans: A

131. 24-year-old smoker with no respiratory pathology develop 20% pneumothorax Treatment?
a. Discharge with CXR on OPD basis
b. Aspiration
c. Admit and observe for next 24-48 hours
d. Insert 14G canula into 2nd intercostal space

Ans: A

132. Patient presented with Low BP, Pulse 115, hyper-resonant chest with reduced breath sound, there is also added sound on left parasternal border, Diagnosis?
a. Esophageal rupture
b. Pneumothorax
c. Pleural effusion
d. Pulmonary edema
e. Pneumonia

Ans: B

133. Patient with chest pain, positive Hamman's sign (on auscultation a click /sound synchronous with heart sounds) was present, likely cause of the feature?
a. Pleural effusion
b. Pulmonary edema
c. Pneumonia
d. Left apical pneumothorax.
e. Asthma

Ans: D

134. Labourer took heavy load upstairs, he developed chest pain and acute SOB with hyper resonant chest right side with decreased chest movements and absent breath sound on the same side, Diagnosis?
a. Pneumothorax
b. Pulmonary infarction
c. Pneumonia
d. Asthma
e. Aortic dissection

Ans: A

135. A 27 yrs. old labourer going upstairs suddenly develops shortness of breath and chest pain with stable vitals, what is most likely Dx?
a. Aortic dissection
b. Pneumonia
c. Pneumothorax
d. Myocardial infarction
e. pulmonary embolism

Ans: C

136. Heavy Smoker patient developed pneumothorax Treatment
a. IV antibiotics
b. Ventilation
c. Chest tube
d. Video assisted thoracoscopic surgery
e. Nebulization with salbutamol

Ans: C

137. Management of spontaneous pneumothorax
a. Chest drain can be clamped
b. Percutaneous needle aspiration is alternative to chest tube
c. Remove after 24 hours of full expansion of lungs
d. High flow oxygen does not accelerate pleural air absorption
e. Continuous bubbling after 24 hours is indication for surgery

Ans: C (Ref: ACCP AND BTS guidelines)

Radiant Notes

Treatment (Ref: MRCP pass medicine and Uworld notes 2019)

Primary pneumothorax
- If <2cm and asymptomatic ----Discharge & follow up x-ray after 2 weeks
- If <2cm and symptomatic ----Aspiration—If fails then chest tube

Secondary pneumothorax
- All patients should be admitted for at least 24 hours
- If <1cm -----High flow oxygen, observe for 24 hours
- If 1-2cm -----Aspiration
- If >2cm/ >50 years of age/ symptomatic ------ chest tube

Tension pneumothorax
- Urgent needle decompression followed by chest tube placement

Average interpleural distance	Approximate size of pneumothorax
0.5 cm	10%
1 cm	15 %
2 cm	30%

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138. **A diagnosed case of RA patient with obstructive pattern on spirometry. What can be the possibility?**
   a. Chronic bronchitis
   b. Emphysema
   c. Bronchiolitis obliterans
   d. Lung carcinoma

Ans: C

139. **Rheumatoid arthritis patient with SOB that was progressive and pleural fluid analysis showed decreased glucose, Diagnosis**
   a. Pancreatitis
   b. Bronchiolitis obliterans.
   c. Oesophageal perforation
   d. Tuberculosis

Ans: B

140. **Patient with polyarthritis, developed pleural effusion, diagnostic of the disease will be?**
   a. Pleural fluid for cell count
   b. Pleural fluid for proteins
   c. Pleural fluid for glucose
   d. Pleural fluid for LDH

Ans: C

141. **40 years old male patient with arthritis, increase neutrophils and low glucose on pleural fluid R/E, Likely diagnosis?**
   a. Rheumatoid arthritis
   b. SLE.
   c. Mesothelioma
   d. pulmonary embolism
   e. tuberculosis

Ans: A

142. **A patient with decreased breath sound and vocal resonance with trachea deviated to opposite side?**
   a. Pleural effusion
   b. Pulmonary fibrosis
   c. Asthma
   d. Atelectasis

Ans: A

143. **Which value in pleural effusion is most helpful in diagnosis**
   a. Sugar
   b. Protein
   c. LDH
   d. Amylase

Ans: B

144. **A diagnosed case of RA patient develops pleural effusion. Best test will be**
   a. Pleural fluid for glucose
   b. Pleural fluid for cell count
   c. Pleural fluid for proteins
   d. Pleural fluid for LDH

Ans: A

145. **Exudative pleural effusion is:**
   a. Serum protein: pleural protein ratio > 0.5
   b. Serum LDH: pleural protein ratio > 0.6
   c. Pleural LDH >2/3 of upper limit of LDH
   d. Serum protein: pleural protein ratio
   e. Serum LDH: pleural protein ratio

Ans: C

146. **A patient presents to you with SOB. CXR is done and is showing large pleural effusion. Next appropriate step is**
   a. Therapeutic tap
   b. Diagnostic tap
   c. Bronchoscopy
   d. CT chest with IV contrast

Ans: A

Pulmonology

Radiant Notes

Pleural Effusion

Lights Criteria		
	Exudate	Transudate
Pleural fluid protein: serum protein	>0.5	<0.5
Pleural fluid LDH: to serum LDH	>0.6	<0.6
Pleural LDH	>2/3 upper limit of N serum LDH	<2/3 upper limit of N serum LDH

Note:
- All criteria for transudate must be fulfilled to be considered a transudative effusion.
- If any one of the criteria for exudates is met – it is an exudate

Rheumatoid arthritis: respiratory manifestations
- ✓ Pleural effusion (the commonest)
- ✓ Bronchiolitis obliterans
- ✓ Pulmonary fibrosis
- ✓ Pulmonary nodules

Characteristic pleural fluid findings in Diseases:
- Low glucose→ Mnemonic (MEAT): Malignancy, Empyema, rheumatoid Arthritis, Tuberculosis
- Raised amylase → pancreatitis, oesophageal perforation
- Heavy blood staining→mesothelioma, pulmonary embolism, tuberculosis

Point to remember
- ✓ SOB + Pleural Effusion→ Diagnostic + Therapeutic Tap
- ✓ Pleural Effusion Only → Diagnostic Tap

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Pulmonology

147. Lung collapse can present in all of the following conditions except

a. Pleural effusion
b. Decreased lung volume
c. Mediastinal shift/Trauma
d. Elevation of diaphragm

Ans: **A**

148. A 38 years old female who is a known case of Rheumatoid arthritis presents to you with SOB, CXR was done; showing pleural effusion. What in the next best step?

a. Pleural fluid aspiration
b. Pleural biopsy
c. CT chest with IV contrast
d. U/S chest
e. Anti-CCP

Ans: **A**

149. Patient with history of pneumonia, pleural fluid R/E shows PH=7.29, LDH=1000, while cell count 3000 predominantly neutrophilic.

a. Complicated pleural effusion/Parapneumonic effusion
b. Tuberculosis
c. Pancreatitis
d. Malignancy
e. Trauma

Ans: **A**

150. A patient presented to you with left sided pleural effusion. You admitted him and pleural tap was done. You started ATT on the basis of pleural effusion report. He responded very well but after 2 months he developed pleural effusion on the right side. Your next best step will be:

a. Pleural biopsy
b. CT chest with IV contrast
c. Sputum for AFB C/S
d. Pleural fluid for C/S

Ans: **A**

151. A patient presented with left sided pleural effusion and was diagnosed as Tuberculosis. He was started on ATT after which he got better, but after three months developed pleural effusion of right side, pleural biopsy was negative for malignant cells, what next to do?

a. CT chest with IV contrast
b. Pleural tap for malignant cells
c. Pleural tap for cytology
d. Repeat tap again

Ans: **C**

152. A patient who underwent right hemicolectomy 2 years back now presented with pleural effusion. Which test helps in diagnosis?

a. Thoracoscopy
b. Pleural fluid cytology for malignant cells
c. Carcinoembryonic antigen

Ans: **B**

153. Which of the following favours transudative pleural effusion?

a. Large effusion
b. 3 lymphocytes per micro liter
c. Increase fibrin
d. Inc LDH counts

Ans: **B**

154. Which of the following is a reasonable indication to perform tube thoracostomy in a patient with a para-pneumonic pleural effusion?

a. Pleural fluid serum LDH ratio 0.6
b. Serum pleural fluid albumin gradient>1.1
c. Pleural fluid pH=7.0
d. Pleural fluid glucose >100mg/dl
e. Fever >101.5f

Ans: **C**

155. Patient with history of fall and had severe injury of ribs, he is complaining of SOB a tube was inserted, there is continuous rush of air, possible diagnosis

a. Bronchopleural fistula
b. Empyema
c. Atelectasis

Ans: **A**

156. If a patient develops empyema thoracis, how will you manage such a patient?

a. Chest intubation
b. Rib resection along with open thoracotomy
c. Decortication

Ans: **A**

157. A 20-year-old boy has stab injury and developed chest infection 8 weeks back. He took multiple courses of antibiotics but didn't improve and is still febrile. Needle aspiration shows thick pus, what should be done?

a. Decortication
b. Continue aggressive antibiotic therapy
c. RIB resection and open chest drainage

Ans: **A**

158. Patient of necrotizing bacterial pneumonia and on antibiotics now presented to u with complaints of large pleural effusion

a. Chest tube
b. Decortication
c. Rib resection and drainage

Ans: **B**

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159. Gold standard test for diagnosis of Pulmonary embolism

a. D dimers
b. Doppler ultrasound
c. HRCT
d. CTPA (Pulmonary angiogram)
e. V/Q scan

Ans: D

160. Which one of the following is used as a Screening test for DVT?

a. Doppler ultrasound
b. ABG's
c. Venography
d. X-ray

Ans: A

161. Left leg pain DVT best diagnostic test?

a. Doppler
b. Left leg venography
c. CT scan

Ans: B

162. A diagnosed case of DVT. Died. On autopsy, finding in lungs will be

a. Fat embolism
b. Air embolism
c. Atheroembolism
d. Pneumothorax

Ans: C

163. A young man got fracture of femur about 2 months back. he was discharged from hospital with POP placed. Now he presents to you with hemoptysis and chest pain. CXR shows small pleural effusion and wedge-shaped opacity. What is your most likely diagnosis?

a. Pneumonia
b. Air embolism
c. Fat embolism
d. Pulmonary Embolism

Ans: D

164. Patient who had some bone fracture after RTA, and then after 4 days he dies, on autopsy. Petechial haemorrhages in the brain, Diagnosis

a. Fat embolism.
b. Air embolism
c. Amniotic embolism
d. Pneumothorax

Ans: A

165. A 29-year-old pregnant lady develops sudden SOB and tachycardia with no other physical findings. Which of the following is the most likely diagnosis?

a. Pulmonary embolism
b. Pneumothorax
c. Pneumonia
d. Pulmonary infarction
e. Air embolism

Ans: A

166. A patient of massive pulmonary embolism will most commonly present with?

a. Dyspnea
b. Bradycardia
c. Pulmonary edema
d. Shock

Ans: D

Radiant Notes

DVT investigations

- D-dimer (considered positive >500ng/mL)
  - ✓ High risk of false positives in: elderly, infection, recent surgery, trauma, haemorrhage, late in pregnancy, liver disease, cancer
- Best screening test---doppler U/s
- Best diagnostic test-- Venography

PE investigations

- ECG:
  - ✓ Most common finding =sinus tachycardia
  - ✓ Large PE----**S1Q3T3** (i.e. Right ventricular strain) causing S wave in Lead I, Q wave and inverted T wave in lead III
- D-dimer (considered positive >500ng/mL)- If positive do either CT-PA or V/Q scan
- CT-PA
  - ✓ **First line and gold standard investigation**
- V/Q scan:
  - ✓ Useful in patients with renal impairment and dye allergy
- Chest X-Ray:
  - ✓ Westermark's sign:
  - ✓ Hampton's hump

Duration of therapy:

- First episode of VTE due to reversible risk factors (e.g. surgery, major trauma) = 3 months
- If VTE is unprovoked i.e. idiopathic or risk factors are weak = 6 months
- Persistent prothrombotic risk or a history of previous emboli (second episode) = lifelong

Thrombolysis:

- First-line treatment for massive PE where there is circulatory failure (e.g. hypotension, acidosis).
- Streptokinase -----250,000 U as a loading dose over 30 minutes, followed by 100,000 U/hr over 12-24 hours.

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168. A female Patient has developed pulmonary embolism, what is the mechanism of respiratory distress in a Pt with pulmonary embolism?

a. Mismatch perfusion to the affected area
b. Decreased ventilation to the affected area
c. Decreased physiological dead space

Ans: **A**

169. A 45 yrs. old male with sudden shortness of breath and chest pain. ECG shows sinus tachycardia what is most likely Dx?

a. Pulmonary hypertension
b. Pulmonary embolism
c. Acute pancreatitis
d. Acute MI

Ans: **B**

170. Regarding pulmonary embolism, what is correct?

a. Most common ECG presentation is right axis deviation
b. Common in males
c. Fever is infrequent
d. Settles with high flow oxygen

Ans: **A**

171. A 34-year-old female who is 34 weeks pregnant, developed DVT, confirmed on Doppler scan. what is the preferred anticoagulant?

a. Clopidogrel
b. Aspirin
c. IV heparin
d. Warfarin
e. Subcutaneous LMWH

Ans: **E**

172. A 60-year-old male developed left sided hemiplegia about 2 months back. He remained bedridden for quite a time and developed sudden SOB. He was suspected to have pulmonary embolism which was confirmed after CTPA. What is treatment of choice?

a. Warfarin
b. Heparin
c. Aspirin
d. Clopidogrel
e. Streptokinase

Ans: **A**

173. True regarding prophylaxis for DVT?

a. Low dose LMWH
b. Warfarin
c. Unfractioned heparin
d. Clopidogrel

Ans: **A**

174. What is the best step in the management of patient having pulmonary embolism with circulatory shock?

a. O2 inhalation
b. Thrombolysis
c. IV Lasix
d. IV nitrates
e. IV fluids

Ans: **B** (Sometimes option of streptokinase given)

175. Patient of Atrial fibrillation developed pain and pallor of right leg on examination peripheral pulses absent, investigation?

a. Angiography
b. Duplex scan
c. Phlebography

Ans: **B**

176. A patient in surgical ward suddenly developed SOB after 10 days of Laparotomy. His vitals BP =86/40, pulse =110/min, RR=30min, Temperature=A/F, chest clear, Treatment of choice will be?

a. Thrombolysis
b. IV heparin
c. Aspirin
d. Vena caval filters

Ans: **A**

177. A 45 years old female with DVT was on heparin, now she develops Diabetes mellitus and has left heparin but now again develops DVT, what is the treatment of choice now?

a. Aspirin
b. Warfarin
c. Heparin
d. No treatment required

Ans: **B**

178. A 30-year-old female develops DVT post-delivery suddenly she become dyspnoeic, unconscious, BP =90/50. you suspect pulmonary embolism. what will you do?

a. Observe and leave to resolve spontaneously
b. Embolectomy
c. Thrombolytic therapy

Ans: **C**

179. A young female with history of post-partum DVT was being adequately treated with warfarin. now she still complains of pedal edema and pain in the calf muscles best treatment will be?

a. Lifelong heparin
b. Lifelong warfarin
c. Compression stockings
d. Low dose aspirin

Ans: **B**

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180. Female diagnosed DVT with protein C deficiency, best regimen for her

a. Anticoagulation for 3 months
b. Anticoagulation for 6 months
c. Anticoagulation for life

Ans: C

181. A 45-year-old female presented to you in emergency department with complain of shortness of breath with mild chest pain for 3 days. After returning from Canada 4 days back. There is no significant past medical history but she takes oral contraceptive pills for contraception. She smokes a pack of cigarettes every day. On examination her heart rate was 100/min, 02 of 91% on room air, chest was clear and remainder of the examination was otherwise unremarkable. ECG done showing sinus tachycardia and right axis deviation. What is your diagnosis?

a. Myocardial infarction
b. Pneumonia
c. Pulmonary Embolism
d. Pulmonary infarction

Ans: C

182. Second time DVT in patient, best treatment?

a. 3 months warfarin
b. 6 months warfarin
c. LMWH
d. Life-long warfarin

Ans: D

183. A pregnant lady in her third trimester developed sudden SOB and chest pain. Initial useful diagnostic test will be

a. CT angiogram
b. D dimers
c. V/Q scan
d. ECG

Ans: C

184. A pregnant lady of 6 months presented with shortness of breath tachycardia, tachypnea along with low grade fever, you suspect pulmonary embolism, which investigation should be done?

a. Contrast CTPA
b. D dimers
c. CBC
d. V/Q scan

Ans: D

185. A female who delivered a baby few days back went into severe SOB diagnosis of pulmonary embolism was made what's the best investigation

a. Pulmonary angiography
b. V/Q scan
c. D-dimers
d. Duplex scan

Ans: A

186. A Young man becomes severely short of breath on exertion with chest pain. On ECG right ventricular strain pattern and Right axis deviation. what will be characteristic finding on CXR?

a. Right ventricle hypertrophy
b. Pruning of pulmonary vessels
c. Prominent pulmonary artery

Ans: C (Fleishner's sign)

187. In pulmonary embolism which one of the following is seen on ABGs

a. Hypocapnia
b. Hypercapnia
c. Hyperoxemia

Ans: A

Radiant Notes

Pregnancy: DVT/PE investigation

Guidelines were updated in 2010 by the Royal College of Obstetricians. Key points include:

- **Chest x-ray should be performed in all patients**
- **Compression duplex Doppler:**
  - Should be performed if the chest x-ray is normal
  - This may provide indirect evidence of a pulmonary embolism and negate the need for further radiation exposure
- The decision to perform a V/Q or CTPA should be taken at a local level after discussion with the patient and radiologist
- **Comparing CTPA to V/Q scanning in pregnancy:**

CTPA	V/Q
increases the lifetime risk of **maternal breast cancer** (Pregnancy makes breast tissue particularly sensitive to the effects of radiation)	carries a slightly increased risk of **childhood cancer**

- **D-dimer is of limited use in the investigation of thromboembolism as it often rose in pregnancy.**

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Pulmonology

188. Effective treatment dose of heparin for anticoagulation per day.
a. 25000-40000
b. 20000-30000
c. 40000-45000
d. 15000-20000
e. 10000-20000

Ans: **A**

189. Treatment dose of heparin via IV continuous infusion for pulmonary embolism?
a. 5000-1000 units/24 hour
b. 10000-15000 units/24 hour
c. 15000-20000 units/24 hour
d. 15000-45000 units/24 hour
e. 25000-40000 units/24 hour

Ans: **E**

190. Prophylactic Dose of heparin in DVT is:
a. 8000 to 10000 units
b. 10000 to 12000 units
c. 14000 to 18000 units
d. > 20000 units

Ans: **A**

191. A patient was started on warfarin, now presented with intracranial bleed, treatment?
a. Reduce warfarin dose
b. IV tranexamic
c. FFP's + Inj. Vitamin K

Ans: **C**

192. Patient on warfarin which drug will increase the effect and risk of bleeding
a. Carbamazepine
b. Ciprofloxacin
c. Alcohol

Ans: **B**

Radiant Notes

Heparin dose (for DVT and PE)

- Prophylaxis
  - 5000 units SC q8-12hr
- Treatment
  - 80 units/kg IV bolus, THEN continuous infusion of 18 units/kg/hr, OR
  - 5000 units IV bolus, THEN continuous infusion of 1300 units/hr, OR

Warfarin

- Factors that may potentiate warfarin:
  - Liver disease
  - P450 enzyme inhibitors, e.g.: amiodarone, ciprofloxacin
  - Co-trimoxazole, cranberry juice, NSAID's
- Warfarin toxicity treatment

Asymptomatic/minor INR elevations <5	❖ Hold or reduce warfarin dose until the INR returns to the appropriate range and then resuming warfarin at a lower dose
INR 5.0-8.0 Minor bleeding	❖ Stop warfarin ❖ Give intravenous vitamin K 1-3mg ❖ Restart when INR < 5.0
Major bleeding	❖ Stop warfarin ❖ Give intravenous vitamin K 5mg (phytomenadione) ❖ Prothrombin complex concentrate - if not available then FFP

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The next few questions related to this theory

Radiant Notes

Community Acquired Pneumonia	Nosocomial Pneumonia
It refers to pneumonia occurring before or within 48 hours of hospital admission	Pneumonia occurring >48 hours of hospital admission, or who have been in a healthcare setting within the last 3 months
❖ **Agents:** ○ **Streptococcus pneumonia (most common)** ○ H. influenza ○ Staph. Aureus ○ Moraxella ○ Mycoplasma ○ Viruses (influenza virus, respiratory syncytial virus)	❖ **Organisms:** ○ S aureus (both MSSA & MRSA)—most common ○ P aeruginosa (most common) ○ E. coli

Streptococcus pneumonia	❖ **Rust colour sputum** ❖ More common in elderly, alcoholics, post-splenectomy, immunosuppressed, and patients with chronic heart failure or pre-existing lung disease
Staphylococcal aureus	❖ **Most common cause of pneumonia post influenza** ❖ Association - **intravenous drug users, or patients with underlying disease, e.g. leukaemia, lymphoma, cystic fibrosis (CF)**
Klebsiella pneumonia	❖ Is rare. ❖ **Occurs in elderly, diabetics and alcoholics.** ❖ Causes a cavitating pneumonia, particularly of the upper lobes, often drug resistant. ❖ **Red current-jelly sputum**
Pseudomonas aeruginosa	❖ Green sputum ❖ Most common cause of nosocomial pneumonia ❖ Most common pathogen in bronchiectasis and Cystic Fibrosis ❖ Most common cause of death due to pneumonia in patients with cystic fibrosis
Mycoplasma pneumonia	❖ **Bacteria with no cell wall, (therefore penicillin not useful against it)** ❖ It presents insidiously with **flu-like symptoms** (headache, myalgia, arthralgia) followed by a dry cough. ❖ Diagnosis: **PCR sputum or Mycoplasma serology.** ❖ **Cold agglutinins may cause an autoimmune haemolytic anaemia.** ❖ Complications: **skin rash (erythema multiforme, Stevens–Johnson syndrome, meningoencephalitis or myelitis), Guillain–Barré syndrome.**
Legionella pneumophilia	❖ **Colonizes water tanks kept at <60°C (e.g. hotel air-conditioning and hot water systems) causing outbreaks of Legionnaire's disease.** ❖ Flu-like symptoms (fever, malaise, and myalgia) precede a dry cough and dyspnoea. ❖ **Extra-pulmonary features include**---abdominal pain, diarrhoea, confusion, coma ❖ **Hyponatraemia, deranged LFTS** ❖ Diagnosis: **Legionella urine antigen/culture.**
H. Influenza	❖ Common in COPD, smokers ❖ **Most common bacterial cause of acute exacerbation of COPD** ❖ **Most common organisms isolated from patients with Non cystic fibrosis bronchiectasis:**

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Pulmonology

193. Most common cause of community acquired pneumonia

a. Streptococcus
b. MRSA
c. P aeruginosa
d. E. coli
e. Mycoplasma

Ans: A

194. Patient with fever and pleuritic chest pain. Bronchial breathing in right axilla. prophylactic treatment must include coverage of?

a. Pneumococcus
b. Staph. Aureus
c. Mycoplasma
d. Legionella

Ans: A

195. Legionella patient can't take macrolide, next best treatment?

a. Doxycycline
b. Levofloxacin
c. Penicillin
d. Cephalosporins

Ans: B

196. A patient with history of travel and water tank use, presented with cough, flu like symptoms, labs showed hyponatremia and deranged LFT's which investigation would you run to reach diagnosis?

a. Legionella serology
b. Legionella Culture
c. Electrolytes
d. LFTS
e. CXR

Ans: B

197. A patient with features of pneumonia and hemolysis?

a. Staph aureus
b. Streptococcus
c. Mycoplasma
d. Klebsiella

Ans: C

198. Test used to confirm hemolysis in mycoplasma pneumonia

a. Serum bilirubin
b. Reticulocyte count and blood smear
c. Mycoplasma antigen
d. Serum LDH
e. Liver enzymes

Ans: B (Acc to few there was no option of reticulocyte count—so next best option will be then LDH)

199. Cold agglutinins positive is seen in which one of the following?

a. Legionella
b. Mycoplasma
c. H. influenza
d. Strep. Pneumonia

Ans: B

200. A young policeman presents with fever and cough in chest OPD. Her CXR reveals left lobar pneumonia. What is your treatment of choice in this patient?

a. Ampicillin + 3rd Generation cephalosporin
b. Amoxicillin + tetracycline
c. Ampicillin + tobramycin
d. Ampicillin + tetracycline

Ans: B

201. A young man presented with vomiting and seizures. O/E he is febrile with coarse chest crackles and CXR shows opacity in left middle and upper lung zones. What is the most appropriate Rx for him?

a. Amoxicillin+ Rifampicin
b. Ampicillin+ Tetracycline
c. Penicillin + Gentamicin
d. Amoxicillin+ Gentamicin
e. Amoxicillin+ Clarithromycin

Ans: E (Seizures and Coma occurs mostly with legionella and acc to MRCP pass medicine its treatment should include clarithromycin)

202. A 38-year-old male present to you in chest OPD with history of dry cough and SOB for 5 days preceded by flu like symptoms. On examination you noticed erythematous rash with "target lesions" which are symmetrical. What is the most likely organism?

a. Pseudomonas
b. Legionella
c. Staph. Aureus
d. Mycoplasma

Ans: D

203. Lobar pneumonia plus target lesions?

a. H. Influenza
b. Streptococcus
c. Mycoplasma
d. Klebsiella
e. Staphylococcus

Ans: C

204. A patient known case of COPD presented with acute exacerbation, likely etiologic agent?

a. H. Influenza
b. Streptococcus
c. Mycoplasma
d. Klebsiella
e. Staphylococcus

Ans: A

205. A COPD patent present to you in chest clinic with cough and fever. CXR was done showing multiple nodular shadowing. What is the most likely organism causing pneumonia in this case?

a. Staphylococcus

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b. Streptococcus
c. Mycoplasma
d. Klebsiella

Ans: **A** (Even though H. influenza is most common in COPD followed by streptococcus—but here because of bilateral pneumonia I am selecting staphylococcus)

206. A patient with complaint of cough and sputum presents to you in OPD. you order a CXR which shows multiple cavities. the most appropriate organism responsible?
a. Streptococcus
b. Mycoplasma
c. Klebsiella
d. Staphylococcus
e. H. influenza

Ans: **D**

207. Which one of the following finding is seen on CXR in a patient who developed lobar pneumonia?
a. Loss of lung volume
b. Absent lung markings
c. Patchy fibrosis
d. Air bronchograms with nonhomogeneous consolidation

Ans: **D**

208. The most common infectious agent in a patient with cystic fibrosis related pneumonia:
a. Staphylococcal
b. Staph aureus
c. Pseudomonas
d. Klebsiella
e. E. coli

Ans: **C**

209. Most common organism of Non-cystic fibrosis bronchiectasis?
a. Staph aureus
b. Pseudomonas
c. Klebsiella
d. E. coli
e. H. Influenza

Ans: **E**

210. In cystic fibrosis, most common cause of death due to pneumonia is by?
a. Staph aureus
b. Pseudomonas aeruginosa
c. Klebsiella
d. E. coli
e. H. Influenza

Ans: **B**

211. A young boy presents to you in OPD with high grade fever and cough. CXR was done showing right sided patchy consolidation along with an air fluid level, what is your diagnosis?
a. Empyema
b. Tuberculosis
c. Lung abscess
d. Aspergilloma
e. Carcinoma

Ans: **C**

212. A 67-year-old male aspirated noodles while eating. He was admitted in tertiary care hospital and treated for aspiration pneumonia for 7 days. His recent CXR shows an air fluid level in left mid-zone. What is your diagnosis?
a. Lung abscess
b. Loculated pleural effusion
c. Bronchiectasis
d. Empyema

Ans: **A**

213. A young 20-year-old patient presented with rusty coloured sputum. Which one of the following could be the causative organism?
a. Streptococcal pneumonia
b. Pseudomonas
c. Klebsiella
d. Mycoplasma
e. Legionella

Ans: **A**

214. A middle-aged alcoholic male presents to you in emergency department with acute onset of chest pain and SOB. His sputum culture shows mixed growth. What will be your diagnosis?
a. Lung abscess
b. Pleural effusion
c. Aspiration pneumonia
d. Pneumothorax

Ans: **C**

215. A diabetic patient was admitted in pulmonology ward with thin walled cavitatory pneumonia cause is
a. Staph aureus
b. E. coli
c. Streptococcus
d. Mycoplasma
e. Klebsiella

Ans: **E**

216. Diabetic patient presents with fever and cough. CXR shows patchy infiltration. What is the likely organism?
a. Pneumococcus
b. Klebsiella
c. H influenza
d. Pseudomonas

Ans: **B**

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217. A previously fit patient presents with fever and cough and diagnosed as pneumonia. According to him he was on a trip to some south east country for some time. Which one of the following is responsible?

a. Legionella
b. Mycoplasma
c. H. influenza
d. Strep. Pneumonia

Ans: **A**

218. Which of the following is a typical feature of atypical pneumonia?

a. Non-productive cough
b. Productive cough
c. Afebrile

Ans: **A**

219. A patient presents with history of fever and chest pain. On examination right lower chest is dull to percussion and tender. Your immediate next step will be:

a. Pleural tap
b. CXR
c. U/S chest
d. Blood culture

Ans: **B**

220. Drug of choice for aspiration pneumonia?

a. Metronidazole
b. 3rd generation cephalosporin
c. Fluroquinolones
d. Clindamycin

Ans: **D**

- ✓ Acc to MRCP notes---Combination of Amoxicillin plus metronidazole
- ✓ Acc to Infectious disease society of America (IDSA)---Clindamycin or a carbapenem

221. The most common cause of mortality in patients with influenza

a. Pneumonia
b. Meningitis
c. Sinusitis
d. Laryngitis

Ans: **A**

222. Which is most appropriate treatment among the following for community acquired pneumonia?

a. Tetracycline
b. Tobramycin
c. Carbrincillin
d. Levofloxacin

Ans: **D**

223. A house officer in OPD want to treat a case of Methicillin resistant S. Aureus What is most appropriate antibiotic in this case?

a. Co-amoxiclav.
b. Vancomycin.
c. Linezolid.
d. Piperacillin.

Ans: **B**

224. A case of Drug poisoning was started on ventilator and was responding well, later then on ventilator he was not maintaining O2 saturation, diagnosis?

a. Ventilator associated pneumonia
b. Renal failure
c. Drug induced

Ans: **A**

225. How to diagnose atypical pneumonia?

a. Blood culture
b. Sputum culture
c. Cold agglutinin test
d. Both A and B

Ans: **C**

226. Classic cause of atypical ""walking"" pneumonia?

a. Chlamydia
b. Legionella
c. Mycoplasma
d. S. pneumoniae
e. Pneumocystis jirovecii

Ans: **C**

227. Scenario towards atypical pneumonia what's common finding?

a. Bilateral patchy infiltrate
b. Lobar pneumonia

Ans: **A**

228. A patient suffered from pneumonia after 6 months post-transplant, possible causative agent?

a. Streptococcus
b. Staphylococcus
c. Pneumocystitis Jirovecii

Ans: **C**

229. 50-year HIV Patient with esophageal candidiasis and now presented with SOB and B/L interstitial infiltrates, which one of the following is responsible?

a. PCP
b. Staph. Aureus
c. Streptococcus

Ans: **A**

230. Diagnosed patient of AIDS, infected with PCP, x-ray appearance would be

a. Perihilar and diffuse interstitial infiltrates
b. Lobar pneumonia
c. Bronchopneumonia

Ans: **A**

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231. A patient with progressive SOB. Biopsy showed multinucleated giant cell and granuloma. Diagnosis?
a. TB
b. Sarcoidosis
c. Malignancy

Ans: **A**

232. A patient presents to you with history of fever weight loss and cough with sputum. CXR was done showing B/L apical lung shadows. Your diagnosis will be:
a. TB
b. Bronchiectasis
c. Aspergilloma
d. Silicosis

Ans: **A**

233. A patient presented with complaints of evening fever rise, on examination he has painless fixed cervical lymph nodes palpable, diagnosis?
a. Pneumonia
b. Malaria
c. Enteric fever
d. Tuberculosis

Ans: **D**

234. A young Patient with tuberculosis having serum creatinine =1.2, how he should be treated:
a. Start him on 4 standard drugs (RIPE)
b. Start him on Isoniazid and rifampicin for initial 2 months
c. Start him on isoniazid rifampicin and streptokinase

Ans: **A** (Sometimes instead of RIPE, RHZE IS written which is R=rifampicin, H=isoniazid, Z=pyrazinamide, E=ethambutol)

235. Treatment of Drug susceptible TB?
a. 2 HRZE/ 4 HR
b. 4 HRZE/ 2 HR
c. 2 HR /4 HRZE

Ans: **A** (it means 2 months HRZE/ 4 months HR

236. Alcoholic smoker presents with) cough and sputum, hemoptysis weight loss, CXR – reticulonodular shadow. His bronchoscopy and biopsy picture showed Epitheloid cells with necrotic debris. What else you will find?
a. Fungal hyphae
b. AFB
c. Pleomorphic cell with increased nuclear cytoplasmic ratio
d. Small RBC sized cyst

Ans: **B**

Radiant Notes

Tuberculosis

- Constitutional symptoms (fatigue, anorexia, night sweats, weight loss)
- **Pulmonary TB**
  - Chronic productive cough ± hemoptysis
  - CXR consolidation or cavitation, lymphadenopathy
- **Miliary TB**
  - Widely disseminated spread especially to lungs, abdominal organs, marrow, CNS
  - CXR: multiple small 2-4 mm millet seed-like lesions throughout lung
- **Extrapulmonary TB**

Lymph nodes	❖ **Most common extra-pulmonary site** ❖ Most common site= **cervical and mediastinal nodes** ❖ **Painless lymphadenopathy** ❖ **Initially mobile, later becomes matted and suppurative**
Gastrointestinal disease	❖ Most common site **Ileocecal region** ❖ Right iliac fossa Mass ❖ Tuberculous peritonitis
Pericardial disease	❖ Pericardial effusion= raised JVP, increased pericardial dullness ❖ Constrictive pericarditis = raised JVP, Early third heart sound
CNS	❖ Meningitis ❖ Tuberculoma
Bone and joint disease	❖ Bone: ○ Most common site is spine known as **Pott's disease** ○ Most common site of spine= **Lower thoracic and lumber region** ○ **Psoas abscess** = Cold abscess in inguinal region ❖ Joints: Most common site= **Hip and Knee, Poncet's disease**

Pulmonology

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237. A patient of pulmonary TB who is resistant to INH and Rifampicin. which type of TB he is having?

a. Resistant Tuberculosis
b. MDR TB (Multi-Drug Resistant TB)
c. XDR TB (Extensive Drug Resistant TB)
d. Latent TB

Ans: **B**

238. Patient started on ATT developed neuropathy, what to do?

a. I/M pyridoxine stat then pyridoxine 50mg OD
b. Pyridoxine 25mg OD
c. Pyridoxine 25mg twice a day
d. Stop ATT

Ans: **A**

239. Which one of the following ATT is responsible for neuropathy?

a. Rifampicin
b. INH
c. Ethambutol
d. Pyrazinamide
e. Streptomycin

Ans: **B**

240. A patient diagnosed as pulmonary tuberculosis was started on ATT, after starting ATT he developed bilateral ankle pain, which one of the following drugs is responsible?

a. Rifampicin
b. INH
c. Ethambutol
d. Pyrazinamide
e. Streptomycin

Ans: **D**

241. Tuberculosis resistant to INH, Rifampicin, quinolone and amikacin is called

a. Resistant Tuberculosis
b. MDR TB (Multi-Drug Resistant TB)
c. XDR TB (Extensive Drug Resistant TB)
d. Latent TB

Ans: **C**

242. A bus driver presented to you with 2 months history of fever, cough and weight loss along with 2 episodes of hemoptysis. He was having ESR=65. Your first initial investigation will be

a. Sputum for AFB
b. HRCT
c. CT chest with IV contrast
d. CXR

Ans: **A**

243. Patient when started on ATT started to develop joint pains. Most likely due to?

a. Hyperuricemia
b. Tuberculosis of joints
c. Drug induced SLE

Ans: **A**

244. The chest x-ray of a patient shows unilateral hilar lymphadenopathy and several 1-2mm bilateral opacities, what could be the diagnosis?

a. Pneumoconiosis's
b. Miliary TB
c. ARDS
d. Bronchiectasis
e. Pneumonia

Ans: **B**

Radiant Notes

Treatment:

- **Initial therapy ---(2 months---4 drugs)**
  - Mnemonic RIPE: (Rifampicin, Isoniazid, Pyrazinamide, Ethambutol)
- **Continuation phase – (4 months—2 drugs)**
  - That are Isoniazid & Rifampicin
- **Extended treatment: (For 9-12 months)—considered in the following**
  - HIV- positive patients
  - Tuberculous osteomyelitis
  - Miliary TB
  - Meningitis (Minimum 12 months)
  - Pregnancy
- **INH caused neuropathy**
  - Pyridoxine (vitamin B6) 25 to 50 mg PO daily should be used as prophylaxis with INH to prevent neuropathy
  - While 50–100 mg orally daily as treatment if neuropathy develops.
- **Baby can be breastfed while taking ATT**
- **DOTS (Directly observe therapy short-course)**
  - Initially daily therapy for 2 weeks followed by drugs 3 times/week

Multi-Drug Resistant TB (MDR-TB)

- TB which is resistant to isoniazid and rifampicin

Extensive Drug Resistant TB (XDR-TB)

- TB which is resistant to isoniazid + rifampicin (MDR-TB) + any of the fluoroquinolone (such as levofloxacin or Moxifloxacin) and to at least one of the three injectable second-line drugs (Amikacin, capreomycin or kanamycin).

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245. Female aged 30 years presents with low grade fever and cough for 20 days. Examination shows cervical lymphadenopathy and x-ray demonstrates opacity in upper lobes, most likely diagnosis is:

a. TB lung
b. Hodgkin lymphoma
c. Infectious mononucleosis
d. Milliary TB
e. Cryptic TB

Ans: **A**

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246. Young male diagnosed of PTB put on ATT 3 weeks back then she developed swelling on right anterolateral part of chest which was non illuminated, fluctuant, non-tender, cough impulse positive. dx

a. Lipoma
b. Abscess
c. Lymph nodes
d. Empyema necessitans

Ans: **D**

---

247. A patient presented to you in pulmonology OPD with history of cough, fever and a cystic swelling in front of his chest moving with breathing, what is most likely diagnosis?

a. Empyema necessitans
b. COPD
c. Asthma
d. Lung abscess

Ans: **A**

---

248. Tuberculosis can cause which complication among males?

a. Epididymitis
b. Epididymal cyst

Ans: **A**

---

249. Most common cause of MDR-TB?

a. DM+TB
b. Contact with MDR-TB
c. irregular treatment
d. Steroids
e. Family history of TB

Ans: **C**

---

250. A pulmonary TB patient suddenly develops facial puffiness and pedal edema. On examination, he has hepatomegaly with raised JVP on inspiration. What is the cause:

a. Heart failure
b. Malabsorption
c. Constrictive pericarditis
d. Malnutrition
e. Drug side effects

Ans: **C**

---

251. A 40-year-old patient previously diagnosed as Tuberculous meningitis taking ATT, after 3 weeks he developed confusion and decreased cognition. what is the likely cause?

a. Drug effect
b. Brain abscess
c. Hydrocephalous
d. Cavernous sinus thrombosis
e. ATT resistance

Ans: **C**

---

252. Some old age patient was advised DOTS (Directly observe therapy short-course), how often he needs ATT medications

a. Once every day
b. Once a week
c. Twice a week
d. Three times a week
e. Five times a week

Ans: **D**

---

253. SLE patient started on Anti-TNF, it increases the risk of which one of the following

a. Pneumonia
b. Tuberculosis
c. Leukaemia
d. Lymphoma

Ans: **B**

---

254. In genitourinary tb what will you find

a. Swelling of epididymis
b. Commonest cause of pyelonephritis.
c. Sterile pyuria

Ans: **C**

---

255. A Patient of Pulmonary TB who was prescribed ATT by his GP, he was taking ATT but he has no response, what would you do first?

a. Ask compliance
b. Repeat the dose
c. Add new drugs
d. Add IV injectables

Ans: **A**

---

256. IV drug user failed to respond to ATT, possible reason

a. MDR TB
b. XDR TB
c. Poor compliance

Ans: **C**

---

257. Which one of the following is the most common cause of Pyrexia of unknown origin (PUO)?

a. S. Typhi
b. S. Paratyphi
c. M. Tuberculosis
d. Brucella

Ans: **C**

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Pulmonology

258. Patient was started on ATT, after which LFTS got deranged. which drug you would start first after LFTs become normal?

a. Isoniazid
b. Rifampicin
c. Pyrazinamide
d. Ethambutol

Ans: **A** (*BTS recommendations-to start INH first at a low dose and then increasing to full dose after 2-3 days-followed by addition of rifampicin*)

259. Which ATT has withdrawal symptoms

a. Isoniazid
b. Rifampicin
c. Pyrazinamide
d. Ethambutol

Ans: **B**

260. Tuberculosis patient started on ATT complaining of decreased vision, drug causing this is

a. Rifampicin
b. Streptomycin
c. isoniazid
d. Ethambutol
e. Pyrazinamide

Ans: **D**

261. A lady on ATT became pregnant what to do?

a. Continue with all first 4-line drugs
b. Stop ATT
c. Omit Pyrazinamide
d. Start streptomycin at low dose

Ans: **A** (Google and recent research guidelines and other textbooks are in the favor of continuing it and are placing pyrazinamide in category 2b as associated with better outcomes---but acc to CMDT 2019 Edition page 294---it says it's better to stop pyrazinamide—Choice is yours now-I follow recent updated guidelines)

262. Pt with miliary TB, on ATT, presented with gum oozing, what is best for him?

a. Stop ATT
b. Check platelets
c. Administer FFPS and vit-k

Ans: **A**

263. Patient with tuberculosis having serum creatinine =1.2, how he should be treated:

a. INH, Rifampicin, Pyrazinamide
b. INH, Rifampicin, pyrazinamide, Ethambutol
c. INH, pyrazinamide, ethambutol

Ans: **B**

264. ATT induced renal impairment cause which renal disorder

a. Glomerulonephritis
b. Nephrotic syndrome
c. Interstial nephritis

Ans: **C**

265. A patient who took ATT in the past now presented with SOB and hemoptysis. CXR shows apical cavity with air?

a. ABPA
b. Aspergilloma
c. Healed tb
d. Hydatid cyst

Ans: **B**

266. Regarding multidrug resistant TB, which of the following is correct statement?

a. Patient is non-compliant to drugs
b. It occurs due to taking only first line drugs
c. Sputum is positive after 2 months of continuous drug therapy
d. Mortality exceed 90%

Ans: **C**

267. Streptomycin causes:

a. Vestibular damage
b. Cochlear damage
c. Vestibulocochlear damage

Ans: **C**

268. A known case of tuberculosis patient is on antituberculosis therapy, develops paraesthesia in limbs:

a. Pyridoxine deficiency
b. Niacin deficiency
c. B12 deficiency
d. Folic acid deficiency
e. Thiamine deficiency

Ans: **A**

Radiant Notes

❖ **ATT Drug side effects**

Drug	Complications
Isoniazid	Peripheral neuropathy, Hepatitis
Rifampicin	Orange-red colour body secretions (urine, tears), hepatitis.
Ethambutol	Optic neuritis (colour blindness for green, decreased visual acuity)
Pyrazinamide	Hyperuricemia, Gout, Hepatitis
Streptomycin	8th (vestibular) nerve damage, nephrotoxicity.

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269. A diagnosed TB patient present with SOB.CXR is done and is showing a ball like cavity with air in it.
a. Aspergilloma
b. Bronchogenic CA
c. TB reactivation
d. Lung abscess
e. Emphysema

Ans: A

270. A young male patient who took treatment for pulmonary TB for 9 months, has now presented with a round cavitatory lesion on CXR. The most likely diagnosis
a. Aspergilloma
b. TB reactivation
c. Lung tumor
d. Lung abscess

Ans: A

271. Aspergilloma in the lung cavity. Which of the following is least likely to occur in relation to it?
a. Mets to brain and kidney
b. Hydrothorax
c. Like Tumor on imaging

Ans: A

272. A patient on ATT. developed generalized Anasarca, pleural effusion, pericardial effusion and ascites, JVP normal, likely diagnosis?
a. Silicosis
b. Amyloidosis
c. Constrictive pericarditis
d. Nephrotic syndrome

Ans: B

273. A patient who is a diagnosed case of Pulmonary TB does not respond well to ATT, developed oliguria and subsequently to renal failure. what will be the cause of renal failure?
a. Renal Amyloidosis
b. Myeloma
c. Nephrotic syndrome

Ans: A

Radiant Notes

- **Aspergilloma**
  - ✓ An aspergilloma is a mycetoma (mass-like fungus ball) which often colonizes an existing lung cavity (e.g. secondary to tuberculosis, lung cancer or cystic fibrosis)
  - ✓ Usually asymptomatic but features may include:
    - Cough
    - Haemoptysis (may be severe)
- Investigations:
  - ✓ Chest x-ray: a solid opacity within a cavity often associated with a rim of air.
  - ✓ High titres IgG Aspergillus precipitins (95%)
- Treatment: Amphotericin-B

Amyloidosis

- AL amyloid:
  - ✓ L for immunoglobulin Light chain fragment
  - ✓ due to myeloma, Waldenstrom's, MGUS
  - ✓ features include:
    - cardiac and neurological involvement,
- AA amyloid:
  - ✓ A for precursor serum amyloid A protein,
  - ✓ Seen in TB, bronchiectasis, rheumatoid arthritis
  - ✓ features: renal involvement most common feature

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274. Regarding ARDS

a. Inverse inspiration to expiration ratio to maintain auto PEEP
b. CPAP makes weaning difficult
c. High frequency ventilation is mandatory
d. Steroids have definitive role
e. Albumin should be given to maintain oncotic pressure

Ans: A

275. A 36-year-old male patient fell into a river but rescued. He developed ARDS. What is the characteristic feature of ADRS?

a. Low frequency ventilation is necessary
b. Steroids have a definitive role
c. Albumin to maintain oncotic pressure
d. Inverse inspiratory to expiratory pressure to maintain auto PEEP
e. CPAP makes it worsen and result in respiratory difficulty

Ans: D

276. In a patient with ARDS, pathophysiological cause of edema is:

a. Capillary leakage
b. Increases hydrostatic pressure
c. Increased oncotic pressure
d. Increased osmotic pressure
e. Decreased oncotic pressure

Ans: A

277. Regarding ARDS, all are false except

a. Increase in PCWP
b. Normal PaO2 despite dyspnea
c. Pulmonary arterial pressure (PAP) increase

Ans: C

278. True about ARDS

a. Normal PCWP +interstitial infiltrates
b. Increased PCWP + interstitial infiltrates
c. Decreased PCWP + interstitial infiltrates
d. Increased PCWP + No interstitial infiltrates

Ans: A

279. Test used to differentiate ARDS from cardiogenic pulmonary edema?

a. Right heart pressure
b. Spirometry
c. PEFR
d. PCWP

Ans. D

280. Which statement is diagnostic of ARDS:

a. PaO2: FiO2 < 300
b. PaO2: FiO2 < 200
c. PaO2: FiO2 < 100
d. PaO2: FiO2 = normal

Ans: B

281. In a patient with ARDS following is correct answer?

a. PCWP remain normal
b. PCWP is increased
c. PCWP is decreased
d. Onset takes time

Ans: A

282. How to differentiate pulmonary edema of ARDS from heart failure

a. PCWP less than 18mmHg
b. PCWP more than 18mmHg
c. PCWP more than 25mmHg

Ans: A

Radiant Notes

Adult Respiratory Distress Syndrome (ARDS)

✓ Diffuse alveolar damage → ↑ alveolar capillary permeability → protein-rich fluid leakage into alveoli and non-cardiogenic pulmonary edema (normal PCWP)

Characteristics/ Criteria (American-European Consensus Conference)

✓ Acute onset
✓ Bilateral infiltrates on CXR
✓ Non-cardiogenic (**pulmonary capillary wedge pressure is normal i.e. < 18mmHg**)— most useful parameter in differentiating ARDS from cardiogenic pulmonary edema
✓ **PO2/FiO2 < 200 mmHg** (PaO2:FiO2 ratio of less than 26.7 kPa)
✓ Increased pulmonary arterial pressure

According to Berlin updated definition

✓ Mild ARDS---PO2/FiO2 < 300 mmHg
✓ Moderate ARDS---PO2/FiO2 < 200 mmHg
✓ Severe ARDS---PO2/FiO2 < 100 mmHg

Causes:

✓ Shock, sepsis (MOST COMMON), trauma, uremia, aspiration of gastric contents, oxygen toxicity, near drowning, or overdose with street drugs such as heroin

Management:

✓ Low tidal volume and High PEEP
✓ Rest supportive treatment and treating the underlying cause

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283. A lady drone in water. she was taken out and was resuscitated, develop ARDS. Mechanism?
a. Interstitial edema
b. Increase lung compliance
c. Oxygen cause reversal of symptoms
d. Hypoxia improves with oxygen therapy

Ans: A

284. ARDS is most likely associated with
a. Acute pancreatitis
b. Shock.
c. Sepsis
d. Aspiration of gastric contents

Ans: C

285. Person burn inside the room, in hospital he was put on ventilator and had bilateral lung crepitation, he is at risk of?
a. Lung spasm
b. ARDS
c. Acute lung injury
d. Pneumonia

Ans: B

286. Patient in ICU now develops worsening SOB with symmetrical ground glass opacities, likely cause is?
a. ILD
b. ARDS
c. Emphysema
d. Pneumonia

Ans: B

287. ARDS can be differentiated from heart failure on basis of?
a. Normal PCWP
b. Increase PCWP
c. Decrease PCWP

Ans: A

288. A 20-year-old male presents in A&E department with history of severe SOB. On examination his pulse=90/min, BP=120/80, RR=30/min. ABG's show pH=7.04, pCO_2=22.5 kpa, pO_2=6kpa, HCO_3=32, spO_2=97%. The most appropriate diagnosis is:
a. Acute type 1 Respiratory failure
b. Acute type 2 Respiratory failure
c. Chronic type 1 Respiratory failure
d. Chronic type 2 Respiratory failure

Ans: B

289. A patient after 3 days of abdominal surgery has developed non-productive cough with right sided crepitation's. What is the cause?
a. Pneumonia
b. Atelectasis
c. Pneumothorax

Ans: A

290. The most common cause of atelectasis?
a. Post-surgery abdomen
b. Endobronchial secretions
c. Trauma
d. Tumor
e. Foreign body

Ans: A

291. 2 days after abdominal surgery an obese patient develops shortness of breath tachycardia and tachypnea your diagnosis will be
a. Pulmonary infarctions
b. Embolism
c. Atelectasis
d. Pneumonia

Ans: C

292. Post-operative atelectasis occurs within?
a. 72 hrs
b. 48 hrs
c. 96 hrs
d. 12 hrs

Ans: B

Radiant Notes

Type-1 respiratory failure
- ✓ Defined as hypoxia (PaO2 <8kPa) with a normal or low PaCO2.
- ✓ It is caused primarily by ventilation/perfusion (V/Q) mismatch, e.g.:

Type II Respiratory Failure
- ✓ Defined as hypoxia (PaO2 <8kPa) with hypercapnia (PaCO2 >6.0kPa).
- ✓ This is caused by alveolar hypoventilation, with or without V/Q mismatch.

Post-surgery Respiratory complications
- ✓ Upto 48 hours---Atelectasis
- ✓ After 48 hours----Pneumonia

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293. A 75-year-old smoker presents in ER department with hemoptysis and cough Labs (given) serum Ca=18. CXR shows an opacity in the hilar area which seems to be well defined. What do you think he might have?

a. Small cell carcinoma
b. Solitary nodule
c. Squamous cell Carcinoma
d. Adenocarcinoma

Ans: **C**

294. In squamous cell CA, which one of the following percentage features is least commonly seen

a. Lambert Eaten syndrome
b. Hyperthyroidism
c. Hypertrophic pulmonary osteoarthropathy
d. Hypercalcemia

Ans: **A**

295. Which of the following is the most common cause of bronchogenic CA?

a. Squamous cell carcinoma
b. Adenocarcinoma
c. Small cell carcinoma
d. Large cell carcinoma
e. Carcinoid

Ans: **B**

296. A 60-year-old male smoker presents with ptosis, anhidrosis and hoarseness of voice. CXR shows erosion of upper ribs and upper lobe consolidation?

a. Cervical rib compression
b. 3rd nerve palsy
c. Pancoast tumor
d. Thymoma

Ans: **C**

297. Which lung cancer is mostly associated with cavitatory lesions?

a. Squamous cell carcinoma
b. Small cell carcinoma
c. Large cell carcinoma
d. Carcinoid
e. Adenocarcinoma

Ans: **A**

298. A smoker presents to you with SOB. His CXR shows pleural effusion with raised hemidiaphragm. What will be the best test to reach the diagnosis?

a. Bronchoscopy with biopsy
b. HRCT chest
c. Transbronchial biopsy
d. Mediastinoscopy

Ans: **A**

299. Elderly male with bronchogenic Ca presented with headache, neck vein distension, flushed face. next step in management?

a. Stenting
b. Steroids
c. Radiotherapy
d. Surgery

Ans: **A**

300. Patient with cough and shortness of breath on examination he has finger swelling of hand and found to have hypertrophic pulmonary osteoarthropathy (HPOA), investigation to be carried out first?

a. X-ray of hand
b. X-ray chest.
c. PFTs
d. Sputum c/s

Ans: **B**

Radiant Notes

Small cell (oat cell) carcinoma	❖ Neoplasm of neuroendocrine Kulchitsky cells→small dark blue cells
Adenocarcinoma	❖ **Most common lung cancer in non-smokers and overall (except for metastases)** ❖ Associated with EGFR, amenable to EGFR tyrosine kinase inhibitors
Squamous cell carcinoma	❖ **Most common in smokers**
Large cell carcinoma	❖ Highly anaplastic undifferentiated tumor ❖ Poor prognosis. ❖ Can secrete β-hCG
Bronchial carcinoid tumor	❖ Excellent prognosis

❖ **Complications**

Superior Vena Cava Syndrome	❖ Compression or invasion of the superior vena cava, resulting in facial swelling and cyanosis along with dilation of the veins
Pancoast tumor (Superior Sulcus tumor):	❖ Involvement of the apex of the lung, often with Horner syndrome ❖ Hoarseness (Recurrent Laryngeal Nerve Compression) ❖ Brachial plexus palsy (C8-T12)
Paraneoplastic Endocrine Syndromes	**Small cell carcinoma:** • ↑ ACTH • SIADH • Lambert-Eaton myasthenic syndrome **Squamous cell carcinoma:** • PTH-hormone-like activity (hypercalcemia) • Hypertrophic pulmonary osteoarthropathy (HPOA)

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301. The patient complained of pain in the shoulder and chest region but also described reduced sensation and power in her arm and a worsening of her respiratory symptoms, he is having ptosis what is most likely Dx?
a. Bronchogenic CA
b. COPD
c. Pancoast tumor
Ans: C

302. In Pancoast tumour best, investigation is?
a. X -Ray chest
b. CT with Biopsy
c. CT with Contrast
Ans: B

303. A 65-year-old male presents to you in OPD with complain of hemoptysis. His sputum cytology is positive for malignant cells. CXR done which came out to be normal. What is the next best step in the management?
a. Bronchoscopy washings and brushings
b. Annual CXR
c. Mediastinoscopy
d. Pleuroscopy
e. Unilateral pneumonectomy
Ans: A

304. A 30-year-old female presents to you in chest OPD. She complains of hemoptysis which is recurrent, along with scanty sputum. She was on OCPs for last 3 years. CXR and V/Q scan was normal. Your diagnosis will be
a. Bronchial carcinoma
b. Bronchial adenoma
c. Idiopathic
d. Pulmonary hypertension
e. Thromboembolic disease
Ans: B

305. In case of adhesions in pleural space; lymphatic drainage form viscera will drain into
a. Cervical lymph node
b. Celiac lymph nodes
c. Axillary lymph nodes
d. Mediastinal lymph nodes
e. Inguinal lymph nodes
Ans: C

306. Which one of the following cancers mostly causes mets in brain?
a. Testicular CA
b. Breast CA
c. Lung CA
d. Ovarian CA
Ans: C

307. A 55-year-old male presents with symptoms of fever, chills and coloured sputum production. He is former smoker of 40 packs a year. His chest x-ray is abnormal for a 2cm hilar mass and right lower lobe infiltrate:
a. Pneumonia
b. Bronchiectasis
c. Chronic obstructive pulmonary disease
d. Bronchial carcinoma
e. TB lung
Ans: D

308. Best statement regarding bronchial carcinoma is:
a. Superior sulcus tumor causes Horner syndrome
b. Mediastinal invasion causes dysphagia
c. Pleuritic pain occurs due to malignant invasion of pleura
d. Mediastinal invasion causes bleeding
e. Small cell carcinoma is the most common type
Ans: A

309. A patient presented with complaint of shortness of breath, on chest Xray trachea is deviated towards the opacity and findings of lung collapse as well, diagnosis?
a. Pneumothorax
b. Pleural effusion
c. Bronchial obstruction
Ans: C

310. Which one of the following paraneoplastic features is LEAST commonly seen in patients with squamous cell lung cancer?
a. Lambert-Eaton syndrome
b. Hyperthyroidism
c. Hypertrophic pulmonary osteoarthropathy
d. Hypercalcaemia
Ans: A

311. Chronic Smoker patient presented with cough & hemoptysis; his right eye smaller than left eye
a. CA lung
b. Bronchiectasis
c. Cystic fibrosis
Ans: A

312. X ray chest of a middle-aged male patient shows a coin lesion. What is the next step?
a. Ct scan chest with contrast
b. Fibreoptic bronchoscopy
c. Review old chest X ray
d. Rigid bronchoscopy
Ans: C

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313. A 45year old worker who works in a ship breaking factory complain of dry cough and SOB on exertion. On examination, he has clubbing and has bilateral late inspiratory crepts at the bases. CXR shows bilateral basal nodular shadows. Your diagnosis will be

a. Asbestosis
b. Silicosis
c. Sarcoidosis
d. TB
e. Fibrosing alveolitis

Ans: **A**

314. Pleural biopsy is indicated in which of the following conditions?

a. Tuberculosis
b. Pleural effusion
c. Mesothelioma
d. Para pneumonic effusions
e. Pneumothorax

Ans: **C**

315. A shipyard worker presented to you in emergency with shortness of breath and dry cough. On examination you found lower lobe basal crepts. what is most likely diagnosis?

a. ABPA
b. Asbestosis
c. COPD
d. Asthma

Ans: **B**

316. A middle-aged woman presented to you in chest clinic with dry cough. Her CXR had already been done showing bilateral lymphadenopathy. Which one of the following is least likely associated with this finding?

a. Amyloidosis
b. Sarcoidosis
c. TB
d. Histoplasmosis

Ans: **A**

Radiant Notes

- **Asbestos** is from the **roof** (was common in insulation), but affects the **base** (lower lobes).
- **Silica** and **coal** are from the **base** (earth), but affect the **roof** (upper lobes).

Asbestosis	❖ Associated with shipbuilding, roofing, plumbing ❖ Associated with ↑incidence of lung cancer (bronchogenic carcinoma > mesothelioma). ❖ Smoking (10% risk) and asbestos (5%) are synergistic, i.e. a smoker with asbestos exposure has a 10 × 5 = 50 times increased risk
Berylliosis	❖ Associated with exposure to beryllium in aerospace and manufacturing industries.
Anthracosis	❖ Inhalation of carbon dust, Endemic in urban areas and causes no harm
Coal workers' pneumoconiosis	❖ Inhalation of coal dust, which contains both carbon and silica, also known as black lung disease.
Silicosis	❖ Associated with glass manufacturers, and stone cutters. Sandblasting, mines. ❖ It is thought that silica may disrupt phagolysosomes and impair macrophages, increasing susceptibility to TB. ❖ "Eggshell" calcification of hilar lymph nodes

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317. A young female after a quarrel presents to you in emergency with complain of SOB. You ordered House officer to send ABGs immediately. Her ABGs show Ph=7.46 Pco2=22, HCO3=28 PaO2=100 your diagnosis?

a. Bronchial asthma
b. Obesity
c. COPD
d. Hyperventilation syndrome

Ans: **D**

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318. Four-week pregnant lady presented with SOB. Here ABGs show Ph=7.55 PCO2=28 PO2 =99 HCO3=26 what should be done?

a. Rebreathing in a bag
b. Start IV heparin
c. CXR
d. Thrombolysis

Ans: **A**

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319. A 45-year-old man presents to you with complain of SOB. Besides other important investigations. ABGs were done showing Pco2=-60mmHg. What is the most likely cause?

a. Hypoventilation
b. Left to right shunt
c. Impaired diffusion
d. CO poisoning

Ans: **A**

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320. In obstructive sleep apnea, all are true except

a. Impotence
b. Poor concentration
c. Somnolence
d. HTN
e. Obesity

Ans: **A**

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321. A diabetic, obese female patient presents to you in OPD. She has complained of excessive daytime sleepiness, diagnosis?

a. Narcolepsy
b. Uncontrolled DM
c. Hypoglycaemic episodes
d. OSA

Ans. **D**

---

322. Old diabetic male, hypertensive, alcoholic and extremely obese met an accident three days ago, he complains of excessive day time sleepiness, cause?

a. OSA
b. Narcolepsy
c. Hypoglycemia
d. Hypertension

Ans: **A**

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323. A patient presents to you with fever, dry cough, chest pain with muscle and joint aches. CXR reveals bilateral consolidation. Labs show haemolytic picture. Diagnostic test will be

a. CXR
b. Sputum culture
c. Cold agglutination test
d. Blood culture

Ans: **C**

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324. A patient presents to you in OPD with a CXR in his hands. Some doctor advised him to do CXR anteroposterior view for his SOB. You identified a coin lesion on his CXR. What should be your next step?

a. Review previous films
b. CXR lateral view
c. FNAC
d. CT chest with IV contrast
e. Repeat CXR

Ans: **A**

---

325. A patient with hypoxia, hypercapnia and polycythaemia is able to restore his blood gases to normal by voluntary hyperventilation. Which area is responsible for this act?

a. Cerebellum
b. Bone marrow
c. Cerebral cortex
d. Respiratory centre

Ans: **D**

---

326. A patient presented with headache and rhinorrhoea. X-ray PNS 45^0 shows hazy frontal sinus. Diagnosis

a. Chronic sinusitis
b. Acute sinusitis

Ans: **A** (Haziness in favor of chronic sinusitis)

---

327. A patient comes to you with complain of difficulty in swallowing. He tells you that some doctor has advised him CXR. His CXR shows raised left main bronchus. Diagnosis which comes into your mind

a. Left atrial enlargement
b. Left ventricle enlargement
c. Left atria and ventricle enlargement

Ans: **A** (left atrial enlargement radiographic findings include superior displacement of left main bronchus on frontal view)

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328. A patient presents to you in emergency department with SOB. On examination; she has bilateral fine crepitations all over her chest

a. CT chest with IV contrast
b. HRCT chest

Ans: **B**

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Pulmonology

329. All drugs will cause pulmonary fibrosis except

a. Methyldopa
b. Amiodarone
c. Bleomycin
d. Methotrexate

Ans: A

330. Which of the following antibiotics can cause pulmonary fibrosis?

a. Co amoxiclav
b. Co trimoxazole
c. Erythromycin
d. Norfloxacin
e. Ofloxacin

Ans: B

331. Most well documented side effect of Busulphan?

a. Renal toxicity
b. Pulmonary fibrosis
c. Hepatic failure
d. Pulmonary fibrosis
e. Thyroid dysfunction

Ans: B

332. A 38-year-old male has decreased eosinophil count, then which of the following is the most likely cause?

a. Contact dermatitis
b. Asthma
c. Prednisolone administration

Ans: C

333. A 36-year-old male smoker, who is a diagnosed case of bronchial asthma, who is on inhaled steroids and beta agonists, presents with hoarseness of voice. Reason of hoarseness will be

a. B2 agonist induced
b. Steroid induced
c. Vocal cord carcinoma
d. Laryngeal carcinoma

Ans: B

334. Which of the following is the major effect of glucocorticoids in bronchial asthma?

a. Anti-tussive
b. Bronchodilator
c. Mucus removing
d. Anti-inflammatory

Ans: D

Radiant Notes

Drugs causing pulmonary fibrosis

Mnemonic: My Nose Cannot Breathe Bad Air

- Methotrexate, Nitrofurantoin, Carmustine, Bleomycin, Busulfan, Amiodarone

Steroids side effects:

- Sore throat, hoarseness of voice, oral candidiasis, Dec bone thickness, glaucoma

335. Absolute contraindication to fiber optic flexible bronchoscopy?

a. Coagulopathy
b. Hypoxemia
c. Unstable cardiovascular status
d. Unstable neck
e. Pain due to ankylosing spondylitis

Ans: C

336. Absolute contraindication to Rigid bronchoscopy?

a. Coagulopathy
b. Unstable cardiovascular status
c. Unstable neck
d. Pain due to ankylosing spondylitis

Ans: C

337. A 32-year-old man presented with stridor; he has history of ETT passed 3 weeks back. Further tests should be done?

a. CXR
b. CT neck and chest
c. Fibreoptic bronchoscopy
d. FNAC

Ans: C (as intubation can cause tracheal stenosis)

Radiant Notes

Contraindication to Fiber Optic Flexible Bronchoscopy

- **Absolute contraindications**
  - ✓ Absence of informed consent
  - ✓ Cardiovascular instability
  - ✓ Inability to oxygenate patient adequately
  - ✓ Uncontrolled continuous bleeding
- **Relative contraindications**
  - ✓ Severe bleeding diathesis or coagulopathy
  - ✓ Hypoxemia
  - ✓ Hypercapnia with acidosis
  - ✓ Sever pulmonary arterial hypertension
  - ✓ Uncooperative patient
  - ✓ Uncontrolled asthma

Contraindication to Rigid Bronchoscopy

- **Absolute contraindications**
  - ✓ Unstable neck
  - ✓ Cervical injury or severe ankylosed cervical spine
  - ✓ Restricted temporomandibular joint
  - ✓ Refractory hypoxemia
  - ✓ Microstomia
- **Relative contraindications**
  - ✓ Bleeding disorders
  - ✓ uncontrolled coagulopathy,
  - ✓ extreme ventilatory and oxygenation demands,

Note: **Remember rigid bronchoscopy is the preferred approach for massive hemoptysis**

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Chapter: 2 Cardiology

1. **What is the most common risk factor for mitral stenosis in middle aged female?**
   a. Rheumatic heart disease.
   b. Infective endocarditis
   c. Malignancy
   d. IV drug abuser

Ans: **A**

2. **Major criteria for Rheumatic fever include:**
   a. Erythema marginatum
   b. Increased PR interval
   c. Fever
   d. Sinus tachycardia
   e. Raised ESR

Ans: **A**

3. **Most common initial manifestation of Rheumatic fever**
   a. Migratory polyarthritis
   b. Carditis
   c. Subcutaneous nodules
   d. Skin rash
   e. Sydenham chorea

Ans: **A**

4. **A patient with stroke, post mortem finding of heart enlarged, mitral valve fused, chordae tendineae short, most common cause?**
   a. Rheumatic heart disease
   b. Aortic regurgitation
   c. Myxoma
   d. Myocardial abscess

Ans: **A**

5. **Cardiac abnormality associated with Rheumatoid arthritis?**
   a. AR
   b. AS
   c. MS
   d. MR

Ans: **A** (While SLE causes MOST COMMONLY MR)

6. **Patient with few days back had history of sore throat now having joint pain and has involuntary hand movements he takes things in hand but drops them what is most likely cause?**
   a. Chorea with Rheumatic fever
   b. Benign essential tremors
   c. Parkinson disease
   d. Huntington disease
   e. Wilson disease

Ans: **A**

Radiant Notes

Rheumatic Fever

- ✓ A multisystem inflammatory disorder with major cardiac manifestations and sequelae
- ✓ Usually occurs 1 to 4 weeks after an episode of pharyngitis caused by group-A β-hemolytic streptococci
- ✓ Diagnostic criteria
  - Jones criteria
  - Considered positive if
    - **Throat swab culture / Elevated ASO titres + 2 major criteria**
    - **Throat swab culture / Elevated ASO titres plus 1 major + 2 minor criteria.**

Major criteria	Minor criteria
Migratory polyarthritis (common initial)	Fever
Carditis (all 3 layers)	Arthralgia
Subcutaneous nodules (painless)	Elevated ESR
Skin rash (erythema marginatum)	First degree AV block
Sydenham chorea (late manifestation)	Leucocytosis

Rheumatic fever treatment

- ❖ For Prevention---Penicillin
- ❖ ARF—even in the absence of active pharyngitis, treat ARF with long-acting IM benzathine penicillin G until adulthood or 10 years
- ❖ Severe chorea—corticosteroids
- ❖ Pericarditis and arthritis—NSAIDS

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7. Patient had sore throat few days back now presented with a skin rash on back with elevated erythematous margins with clear centre, rash is called as

a. Pityriasis Rosea
b. Erythema marginatum
c. Atopic dermatitis
d. Psoriasis

Ans: **B**

8. A patient with Rheumatic fever along with cardiac involvement which of the following treatment is given?

a. Penicillin
b. Benzyl penicillin + Aspirin
c. Aspirin

Ans: **B**

9. A young girl presented to you in OPD with Hx of sore throat associated with high grade fever, that's not responding to antibiotics. Now, she is complaining of pains in various joints, which doesn't stay, Best test to help you in Diagnosis would be??

a. ASO titres
b. Blood CP with ESR n CRP
c. Blood cultures
d. Throat swab culture
e. RA factor

Ans: **D**

10. A young Female presented with fever and cough. After few days, she developed joint pain. Investigation of choice?

a. Blood Culture
b. Throat culture
c. Serum antigen
d. ASO titre

Ans: **B**

11. Fever with migratory polyarthritis, investigation?

a. X ray joints
b. Serum antigen
c. ASO titre
d. ESR

Ans: **C**

12. Pt with rheumatic fever and raise ASO. What to expect most

a. Carditis
b. Migratory arthritis
c. Erythema marginatum
d. Chorea

Ans: **B**

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13. **Eight weeks after a prosthetic heart valve, middle aged woman developed infective endocarditis. Most likely causative agent is**
    a. Streptococcus viridians
    b. Staphylococcus epidermidis
    c. Staphylococcus aureus
    d. Streptococcus bovis

Ans: **B**

14. **The strongest risk factor of infective endocarditis is:**
    a. IVDUs
    b. Prosthetic valves
    c. Previous IE
    d. RHD
    e. Staphylococcus aureus

Ans: **C**

15. **Which one of the following is the most common cause of death in infective endocarditis?**
    a. Valvular insufficiency
    b. DIC
    c. Shock
    d. Myocardial abscess

Ans: **A** (Ref Uworld Notes 2019)

16. **Which one of the following is the most common cause of death in infective endocarditis?**
    a. DIC
    b. CCF
    c. Shock
    d. Stroke

Ans: **B**

17. **Operated for ASD with hemorrhages in retina, now feverish, Most probable diagnosis**
    a. Infective endocarditis
    b. Diabetes
    c. Toxic myocarditis
    d. Enteric fever

Ans: **A**

18. **Which one of the following investigations provides the best investigation of infective endocarditis?**
    a. ECG
    b. Roth spots
    c. Echocardiography
    d. Splinter hemorrhages
    e. Blood culture

Ans: **C**

19. **The most common cause of subacute bacterial endocarditis is**
    a. Streptococcus viridians
    b. Coxiella Brunetti
    c. Staphylococcus aureus
    d. Streptococcus pyogenes

Ans: **A**

Radiant Notes

Endocarditis Classification

Acute Endocarditis

- Staphylococcus aureus (50% of cases), Common in IV drug users
- Commonly involves tricuspid valve
- Mnemonic: Tricuspid valve endocarditis is associated with IV drug abuse (don't "tri" drugs).

Sub-Acute (Bacterial) Endocarditis

- Caused by Streptococcus viridians (more than 50% of cases).
- This type of endocarditis tends to occur in patients with congenital heart disease or pre-existing valvular heart disease, often of rheumatic origin.

Non-bacterial (Marantic/Thrombotic)

- 2° to malignancy, hypercoagulable state, or lupus

Other Forms

- S. bovis (gallolyticus) is present in colon cancer

S. epidermidis on prosthetic valves

Clinical Features: (FROM JANE)

- Fever, Roth spots (retinal hemorrhages + pale centre), Osler nodes (painful subcutaneous nodules in pulp of digits), Murmur
- Janeway lesions (small, painless, erythematous lesions on palm or sole), Anemia, Nail-bed haemorrhage, Emboli

Diagnosis: Modified Dukes criteria

Major criteria	Minor criteria
1. **Positive blood cultures for IE** 2. **Evidence of endocardial involvement**	1. Predisposing heart condition or intravenous drug use 2. Fever 38°C (100.4°F) 3. Vascular phenomena: 4. Immunologic phenomena: ○ Glomerulonephritis Osler 's nodes, **Roth spots,** 5. Microbiologic evidence: ○ Positive blood culture but not meeting major criteria

Definite diagnosis

- 2 major criteria **OR**
- 1 major and 3 minor criteria **OR**
- 5 minor criteria

Possible diagnosis

- 1 major and 1 minor criterion **OR** 3 minor criteria

Cardiology

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Cardiology

20. Scenario of patient having earache/inner ear infection then finding of Infective Endocarditis organism later, most common agent causing this?
  a. Streptococcus viridians
  b. Staphylococcus epidermidis
  c. Staphylococcus aureus
  d. Streptococcus bovis

Ans: A

21. A patient with fever, anemia, weight loss, spleen enlarged, heart murmur, organism most likely responsible
  a. Streptococcus pneumonia
  b. Streptococcus viridians
  c. Staphylococcus aureus
  d. Coxiella Brunetti

Ans: B

22. A 20-year-old male presents with shortness of breath and fever. On fundoscopy there is a lesion with pale centre. What is the diagnosis?
  a. Tuberculosis
  b. Sarcoidosis
  c. Infective endocarditis
  d. Cystic fibrosis

Ans: C

23. A 62-year-old man is admitted with to the cardiology ward with infective endocarditis. Blood cultures grow streptococcus bovis. What is the most appropriate investigation given the blood culture findings?
  a. Bronchoscopy
  b. Cystoscopy
  c. Gastroscopy
  d. Colonoscopy

Ans: D

24. Causative organism of infective endocarditis in IV abuser is?
  a. Staph aureus
  b. Staph epidermidis
  c. Streptococcal viridian's
  d. Enterococci

Ans: A

25. An IV drug abuser presented with fever and dyspnea, echo revealed vegetation and diagnosed as infective endocarditis, most suitable treatment for this patient?
  a. Vancomycin
  b. Ceftriaxone
  c. Benzylpenicillin
  d. Ceftazidime

Ans: A

Radiant Notes

Endocarditis Treatment

Initial blind therapy	**Native valve:** ○ Amoxicillin (If penicillin allergic or MRSA) use vancomycin + low dose gentamycin **Prosthetic valve:** ○ Vancomycin + Rifampicin + low dose gentamycin
Endocarditis caused by Staphylococci	**Native valve:** ○ Flucloxacillin If penicillin allergic or MRSA) use ○ Vancomycin + rifampicin **Prosthetic valve** ○ Flucloxacillin + rifampicin + low-dose gentamicin If penicillin allergic or MRSA use ○ Vancomycin + rifampicin + low-dose gentamicin
Endocarditis caused by Streptococcus	○ Benzylpenicillin If penicillin allergic: ○ vancomycin + low-dose gentamicin

Indications for surgery in IE

- Sever valvular incompetence
- Infections resistant to medical therapy.
- Cardiac failure
- Recurrent emboli after antibiotic therapy.
- Aortic abscess (often indicated by lengthening of PR interval)

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27. A patient with mitral valve prolapse needs tooth extraction (dental procedure) he is allergic to penicillin, which of the following drugs you will prescribe?

a. Tetracycline
b. Methotrexate
c. Clindamycin
d. Metronidazole

Ans: **C** (Even though NICE guidelines say no need of prophylaxis in Dental procedures ☹)

28. Which one of the following patients' needs endocarditis prophylaxis?

a. Patient with isolated secundum ASD having dental extraction
b. Patient with ligated patent ductus arteriosus having cystoscopy
c. Patient with an AVR that is functionally normal, having dental cleaning and scaling
d. Patient with coarctation having cardiac catheterization
e. Patient with primum ASD having TEE

Ans: **C**

✓ NICE recommends dental procedures do not require prophylaxis with exception of Prosthetic cardiac valve

29. A 37-year-old man with a history of IV drug use presents to the ED with complaints of fevers, chills, and malaise for one week. He admits to recently using IV and intramuscular heroin. Vital signs are as follows: T 40.0 C, HR 120 bpm, BP 110/68 mmHg, RR 14, O2Sat 98%. Examination reveals a new systolic murmur that is loudest at the lower left sternal border. Initial management includes administration of which of the following regimens?

a. IV Vancomycin
b. IV Vancomycin, IV levofloxacin
c. IV Vancomycin, IV ceftriaxone
d. IV Vancomycin, IV gentamycin, PO rifampin

Ans: **C**

✓ This patient's history of IV and IM drug use places him at risk for bacterial endocarditis, the most likely etiology for his presenting symptoms. Initial treatment with IV vancomycin and IV ceftriaxone in this situation should target MRSA, streptococci, and enterococci.

✓ IV vancomycin alone would not provide adequate coverage of streptococcal species.

✓ This regimen, including IV gentamycin and PO Rifampin, is indicated in endocarditis involving prosthetic valves.

30. Patient develops viridians group strep septicaemia. Which of following cardiac lesions has highest risk of developing endocarditis?

a. VSD
b. Atrial septal defect
c. Mitral stenosis
d. Mitral Regurgitation

Ans: **A** (The answer is ventricular septal defect is considered a relatively high-risk lesion for infective endocarditis. Mitral valve prolapse with regurgitation, asymmetric septal hypertrophy, and pure mitral stenosis are considered an intermediate risk. Atrial septal defects of the secundum type is considered low risk. (Ref. Fuster, p. 2003)

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Cardiology

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Cardiology

Next few MCQs are best on this theory

Radiant Notes

	Causes	Signs and symptoms	Murmur
Mitral Stenosis	• Rheumatic heart disease (most common cause), • Mitral annular calcification, • Malignant carcinoid	• Apex beat — localized, and tapping. • Heart sounds S1 is loud.	• **Opening snap (presystolic accentuation)** • Mid-diastolic murmur;
Mitral Regurgitation	• Rheumatic fever prevalent countries rheumatic heart disease (50%) • Rheumatic fever non-prevalent countries mitral valve prolapse • Left-sided heart failure • SLE, Marfans syndrome • Endocarditis, Papillary muscle rupture (post MI)	• Apex beat→ forceful, displaced with systolic thrill. • Heart sounds→ soft S1; Split S2, Loud P2 (Pulmonary HTN)	• High-pitched, blowing, pansystolic murmur at apex • Best heard at apex, radiates to axilla
Mitral Valve Prolapse (also known as Myxomatous mitral valve disease, floppy valve syndrome)	• Idiopathic • Familial (autosomal dominant) • Marfans syndrome • Ehler-Danlos syndrome	• Pain (atypical chest pain) — is the most common symptom. • Palpitations • Panic attacks	**High-Pitched, mid-systolic click — is the most common sign**
Aortic Stenosis	• Calcific aortic valve stenosis (dystrophic calcification) --- most common cause • Congenital abnormal unicuspid or bicuspid valve • Rheumatic heart disease	• Angina (most common) • Syncope • Apex beat —sustained • Heart sounds -----soft A2 • Pulse ----Slow-rising pulse with narrow pulse pressure	• **Crescendo-decrescendo ejection systolic murmur** • InaudibleA2 indicates severe AS • **Radiates towards carotid**
Aortic Regurgitation	• Infective endocarditis, Trauma, Aortic dissection • Rheumatic fever, bicuspid aortic valve, Marfan syndrome, Ehlers-Danlos syndrome, ankylosing spondylitis, SLE	• Apex beat → displaced, heaving, forceful • Pulse → large volume, Collapsing (water-hammer) pulse—wide pulse pressure	• High-pitched early diastolic decrescendo murmur at left sternal border. • **Austin-Flint murmur in severe AR**

- Ejection systolic:
  - Aortic stenosis, HOCM, pulmonary stenosis, ASD, Fallot's
- Holosystolic (pansystolic)
  - Mitral/tricuspid regurgitation (high-pitched and 'blowing' in character)
  - VSD ('harsh' in character)
- Late systolic:
  - Mitral valve prolapse (mid-systolic click — is the most common sign)
  - Coarctation of aorta
- Early diastolic:
  - Aortic regurgitation (high-pitched and 'blowing' in character)
  - Graham-Steel murmur (pulmonary regurgitation, again high-pitched and 'blowing' in character)
- Mid-late diastolic:
  - Mitral stenosis ('rumbling' in character)
  - Austin-Flint murmur (severe aortic regurgitation, again is 'rumbling' in character)
- Continuous machine-like murmur:
  - Patent ductus arteriosus (Murmur radiates to back)

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32. Diagnostic feature of mitral stenosis
a. Loud S2
b. Right ventricular hypertrophy
c. Tapping apex beat
d. Atrial fibrillation
e. Mid diastolic rumble

Ans: C

33. A 53 years old male Patient presented with history of chest pain and syncope. on examination he has systolic murmur radiating to the carotid area. What is the most likely cause of his symptoms?
a. Bicuspid aortic valve
b. Aortic root abscess
c. Post rheumatic fever
d. Posterior MI
e. Calcification of the aortic valve

Ans: E

34. Which of the following features are characteristics of mitral stenosis?
a. Sustained Apex beat
b. Loud S2
c. Presystolic accentuation of murmur

Ans: C

35. A 65 years old male presents with chest pain with exertion and light headedness. On examination, he has systolic murmur on right side radiating to neck. The murmur is best heard at the right second intercostal space. You also noticed ecchymosis on his forehead because of a fall 2 weeks back. His vitals are B.P =120/80. Pulse=95/min, R. R=16/min, temp=A/Febrile. What is the most likely diagnosis?
a. Aortic Stenosis
b. Aortic regurgitation
c. Mitral stenosis
d. Mitral regurgitation
e. HOCM

Ans: A

36. Mitral commissurotomy is indicated in:
a. Sever pulmonary HTN
b. Hemoptysis
c. LVF
d. None of the above

Ans: A

37. A patient having severe Aortic Regurgitation which type of murmur he is having?
a. Graham steel murmur
b. Carey coombs murmur
c. Austin flint murmur
d. Machinery like murmur

Ans: C

38. A patient with early diastolic murmur then mid diastolic murmur. Echo proves severe aortic regurgitation, which type of murmur would be seen?
a. Austin flint murmur
b. Graham steel murmur
c. Carey coombs murmur
d. Machinery like murmur

Ans: A

39. 35 years old female having Infective Endocarditis and as well as mitral stenosis, best Investigation to carried out in such case
a. Trans thoracic Echocardiography
b. Transoesophageal Echocardiography
c. 24 Hours Holter Monitoring
d. ECG

Ans: B

40. Feature of mitral stenosis?
a. Loud S2
b. Sustained apex beat
c. Systolic murmur
d. Pre systolic accentuation of diastolic murmur

Ans: D

41. Patient known case of rheumatic fever developed mitral stenosis on auscultation you would hear which murmur?
a. Systolic murmur
b. Pansystolic murmur
c. Mid-diastolic murmur
d. Ejection systolic murmur

Ans: C

42. A patient having mitral stenosis, most commonly presents with
a. Palpitation
b. Dyspnea
c. Syncope
d. Atrial fibrillation

Ans: B

43. Which of the following is the most characteristic of MVP?
a. Pansystolic murmur
b. Benign course
c. NO Mid-systolic click
d. Acromegaly
e. None of the above

Ans: B

44. A 34 years old presents to you with systolic murmur CXR shows absent lung markings in periphery of lung Echo show RV dilatation. ECG shows RVH, what is your diagnosis?
a. Pulmonary stenosis
b. Mitral stenosis
c. Aortic stenosis
d. Pulmonary edema

Ans: A

45. A 12-year-old boy while playing developed sudden SOB. Mother tells that condition improves while squatting, ejection systolic murmur is heard, likely associated pathology with this finding?

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a. Aortic stenosis
b. Pulmonary stenosis
c. Mitral stenosis
d. Mitral regurgitation

Ans: B (Feature/Component of TOF)

46. A 65 years old female develops exertional dyspnea and had 2 episodes of syncope. On examination, she has ejection systolic murmur on left sternal edge with soft A2. What is diagnosis?
a. Aortic regurgitation
b. Mitral stenosis
c. Aortic stenosis
d. Mitral regurgitation
e. HOCM

Ans: C

47. Patient develops murmur post MI, suitable investigation to carry on?
a. ETT
b. ECG
c. Holter
d. ECHO
e. Thallium scan

Ans: D

48. An old watchman had ejection systolic murmur and narrow pulse pressure on examination. He has experienced no chest pain, breathlessness or syncope. Echocardiography confirms aortic stenosis with an aortic valve gradient of 40 mm Hg. How will you manage this patient?
a. Regular cardiology outpatient review
b. Aortic valve replacement
c. Aortic valvuloplasty
d. None of the above

Ans: A (CPSP 2018 MCQ taken from MRCP pass medicine)

49. Most common presentation of Aortic stenosis?
a. Syncope
b. Angina
c. Dyspnea
d. Palpitation

Ans: B **(Ref: Manual of cardiovascular medicine, and textbook of clinical cardiology page 466)**

50. The clinical feature that occurs in both aortic stenosis and aortic regurgitation
a. Pounding heart
b. Angina
c. Bounding pulse
d. Lateral displaced apex beat
e. Slow rising pulse

Ans: B

51. A pregnant lady with severe symptomatic Mitral Stenosis. Echo shows a gradient of 1cm². pressure gradient >15mmHg, she has grade 2 dyspnea. treatment of choice in such case
a. Termination of pregnancy
b. Open Valve replacement
c. Percutaneous Valvulotomy

Ans: C

52. Which is false about heart murmurs?
a. Opening snap and a diastolic rumble is heard in mitral stenosis
b. Holosystolic murmur is heard in mitral regurgitation
c. An S3 is always pathological
d. An S4 is heard in aortic stenosis

Ans: C

53. Aortic stenosis can present with the following except;
a. Angina
b. Left ventricular failure
c. Dizzy spells
d. Hypertensive crises
e. Endocarditis

Ans: D

54. A 73-year-old man has angina pectoris on exertion, but an angiogram reveals noncritical stenosis of the coronary arteries. This occurs most frequently with which of the following valvular heart diseases?
a. Mitral stenosis
b. Mitral insufficiency
c. Pulmonary stenosis
d. Aortic stenosis
e. Aortic insufficiency

Ans: D

55. Main LAD 50%, RCA 70% stenosed, moderately severe symptomatic Aortic stenosis. Surgery of choice in this patient
a. CABG +aVR
b. CABG
c. Aortic valve replacement
d. PCI

Ans: A

56. Female died; biopsy /ECHO findings ruptured chordae plus myxomatous mitral valve, cause
a. Rheumatic heart disease
b. Mitral valve prolapse
c. Myocardial abscess

Ans: B

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57. **An 18-year-old female who is known to have turner's syndrome is referred to cardiology, as she has a murmur. On examination a soft ejection systolic murmur is hear. What is the most likely cause of this finding?**
    a. Coarctation of the aorta
    b. Ventricular septal defect
    c. Pulmonary stenosis
    d. Bicuspid aortic valve

Ans: **D**

58. **An old age male presented with complaint of chest pain, on examination there is a murmur which is radiating towards carotid, this murmur could be due to?**
    a. Aortic stenosis
    b. Aortic regurgitation
    c. Mitral stenosis
    d. Mitral regurgitation
    e. Pulmonic stenosis

Ans: **A**

59. **16-year-old girl diastolic murmur and wide pulse pressure**
    a. AR
    b. ASD
    c. VSD

Ans: **A**

60. **Which is the most common heart valve to get calcified?**
    a. Aortic
    b. Mitral
    c. Tricuspid
    d. Pulmonary

Ans: **A**

61. **A female with Ejection systolic click plus late systolic murmur is a feature of?**
    a. Aortic regurgitation
    b. Aortic stenosis
    c. Mitral regurgitation
    d. Mitral stenosis
    e. Mitral valve prolapse

Ans: **E**

62. **60 years old patient with aortic stenosis has chest pain and dyspnea. Now what is best to do?**
    a. ACE inhibitors
    b. Beta blockers
    c. Aortic valve surgery
    d. Observation and follow up

Ans: **C**

63. **A patient of rheumatic heart disease had mitral stenosis which usually have Mid-diastolic murmur, but she presents with a new systolic murmur, diagnosis?**
    a. ASD lutembacher's syndrome
    b. Eisenmenger's syndrome
    c. Ebstein anomaly

Ans: **A**

64. **Cause of fixed splitting of second heart sound**
    a. ASD
    b. VSD
    c. LBBB

Ans: **A**

65. **Cause of reverse splitting of second heart sound**
    a. ASD
    b. VSD
    c. LBBB

Ans: **C**

Radiant Notes

Splitting of heart sounds

Type	Causes
Loud S2	❖ HTN
Soft S2	❖ Aortic stenosis
Reversed or paradoxical split S2 ❖ When the pulmonic valve closes before the Aortic valve,	❖ (left) LBBB, severe aortic stenosis
Widely split S2 ❖ When it takes longer to the pulmonic valve to close.	❖ RBBB, deep inspiration
Fixed in the middle ❖ When splitting doesn't change with inspiration	❖ Atrial septal defect

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66. Best murmur heard at back?

a. VSD
b. PDA
c. *Mitral stenosis*
d. *TOF*

*Ans: **B** (Other murmur that could be heard at back is coarctation of aorta)*

67. Marfan syndrome most common valve pathology?

a. Mitral stenosis
b. Mitral regurgitation
c. Aortic regurgitation
d. Tricuspid regurgitation

Ans: **B**

68. Boy with progressive dyspnea while standing in assembly for prolonged duration with Bilateral basal crackles

a. CXR
b. Echocardiography
c. ETT
d. PFTs

Ans: **B**

69. A 12 years old girl presented to emergency department with exertional SOB and palpitations. On examination, she had clubbing, with a Pansystolic murmur at left sternal edge. CXR showed decrease peripheral markings oligemic lung fields. ECG done showing Right ventricular hypertrophy. Mother says that she adapts squatting position during dyspnea episode, your diagnosis:

a. PDA
b. VSD
c. TOF
d. Tricuspid atresia
e. Transposition of great vessels

Ans: **C**

70. Tetralogy of Fallot is a

a. Acyanotic heart disease
b. Cyanotic heart disease
c. Autosomal dominant disease
d. X linked disease
e. Cardiomyopathy

Ans: **B**

71. 15 years old child presents with difference in BP between arms and legs with a murmur heard over his back. What is the diagnosis?

A. VSD
B. Coarctation of Aorta
C. Aortic aneurysm
D. Inferior wall MI

Ans: **B**

72. BP in upper right arm 150/90 and left leg is 80/40 with systolic murmur best heard at the back of the chest.

a. Coarctation of aorta
b. PDA
c. VSD
d. TOF

Ans: **A**

Radiant Notes

Tetralogy of Fallot ----(mneumonic-PROVe)

- **Most common cause of early childhood cyanosis.** (does not usually present until 1-2 months therefore TGA is most common at birth)
- Features include
  - **P**ulmonary infundibular stenosis (most important determinant for prognosis)
  - **R**ight ventricular hypertrophy (RVH)—boot-shaped heart on CXR
  - **O**verriding aorta
  - **V**SD
- Tendency of patients to assume a squatting position, presumably because of lessening of right-to-left shunting

Patent ductus arteriosus

- Failure of closure of the fetal ductus arteriosus
- Can be closed surgically or pharmacologically treated with indomethacin
- Continuous, "**machine-like Murmur radiates to back**

Coarctation of aorta

- Hypertension in upper extremities and weak delayed pulse in lower extremities (brachial-femoral delay).
- With age, **collateral arteries erode ribs (notched appearance on CXR).**
- **Systolic murmur heard at back**

Aortic Dissection:

- Associated with hypertension, bicuspid aortic valve, inherited connective tissue disorders (e.g., Marfan syndrome).
- Can present with tearing chest pain, of sudden onset, radiating to the back +/− **markedly unequal BP in arms.**
- CXR shows mediastinal widening.
- Can result in rupture, pericardial tamponade, death.

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73. 20-year-old male presents with weak femoral pulse while radial and brachial pulses are palpable, most likely diagnosis is

a. Tetralogy of Fallot
b. Coarctation of aorta
c. Right ventricular failure
d. Dissecting aorta
e. Transposition of great vessels

Ans: **B**

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74. Patient with PDA now having reversed shunt, which of the following features are characteristic of reversal of shunt?

a. Absent femoral pulse
b. Cyanosis of lower limb
c. Respiratory infection
d. High blood pressure

Ans: **B**

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75. A patient presented to you with chest pain for 2 hours which did not respond to morphine and other drugs. On examination B. P=200/100, Pulse =98/min Temp=Afebrile, R. R=18 / min, Sp02=95% on further examination he has absent left femoral pulse. What will be your diagnostic investigations now?

a. CT chest with contrast
b. Chest X ray
c. Doppler ultrasound of leg
d. MRI
e. Thyroid profile

Ans: **A**

---

76. An isolated VSD will causes enlargement of which chambers

a. Right atrium + right ventricle
b. Left atrium + left ventricle
c. Right ventricle
d. Aorta

Ans: **B** (Initially, large VSD shunts cause left atrial and left ventricular hypertrophy. Later, an uncorrected VSD causes right ventricular hypertrophy due to increasing pulmonary resistance)

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77. Complication of small VSD?

a. Irreversible pulmonary hypertension
b. Eisenmenger
c. Infective endocarditis
d. Aortic regurgitation

Ans: **C**

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78. Complication of large VSD

a. Irreversible pulmonary hypertension
b. Eisenmenger
c. Infective endocarditis
d. Aortic regurgitation

Ans: **A**

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79. Which one of the following is the most common site of ventricular septal defect?

a. Membranous
b. Muscular
c. Atrioventricular canal
d. Conal septal

Ans: **A**

---

80. A patient presented with shortness of breath and cyanosis, ECG shows qR in V1 & RVH, suggestive of Eisenmenger, likely pathology is

a. Infective endocarditis
b. Aortic regurgitation
c. Pulmonary stenosis
d. Mitral stenosis

Ans: **C**

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81. A 60-year-old hypertensive patient developed excruciating chest pain not relived with pethidine. His vital are BP 220/110 mmHg, pulse 90/min, RR 28/min, Temp=AF on further examination he has absent pulse in left leg. What is most diagnostic?

a. Angiography
b. Echocardiography
c. CT angiography
d. Doppler

Ans: **C**

---

82. The most diagnostic feature in coarctation of aorta is?

a. Absent carotid bruit
b. Absent femoral pulses
c. Cardiac Catheterisation
d. Lymphadenopathy
e. Raised JVP

Ans: **B**

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83. Investigation of choice for aortic dissection is

a. CT angio
b. Echo
c. ETT
d. Chest X ray

Ans: **A**

---

84. A male patient who is having chest pain, BP is 140 /90 mmHg, diagnosis of Aortic Dissection is suspected which of the following is most appropriate investigation?

a. X ray chest
b. MRI thorax
c. ECG

Ans: B (if there is no CT scan option, MRI is the best next option—MRI is performed only in non-emergency cases and patient can lie still)

Cardiology

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85. A boy had progressive dyspnea on standing in assembly for more than longer duration. His chest had bilateral crepitation's. what investigation you will do?

a. Chest x-ray (PA view)
b. Echocardiography
c. Exercise tolerance test
d. Pulmonary function test

Ans: **B**

86. Female of short stature and amenorrhea, she has decreased BP in lower limbs, associated with?

a. Coarctation of aorta
b. PDA
c. Transposition of great vessels
d. Ebstein's anomaly

Ans: **A**

87. Pt having aortic aneurysm >5cm with unequal pulses, vitally stable. Most appropriate investigation?

a. Angiography
b. Echo
c. ECG
d. CT SCAN

Ans: **D**

88. Patient had right sided DVT, developed stroke on left side, on CXR left heart enlarged, likely pathology

a. VSD
b. TOF
c. Pulmonary stenosis.

Ans: **A** (If patent foramen ovale in options prefer that)

89. 7-year-old girl known case of PDA came with cyanosis with decreased intensity of murmur?

a. Heart failure
b. Eisenmenger
c. Ebstein anomaly
d. VSD

Ans: **B**

90. A young boy is born with a heart murmur that is subsequently diagnosed as Ebstein's anomaly. which of the following drugs, taken by mother, may have contributed to this case of congenital heart disease?

a. Amiodarone
b. Carbimazole
c. Lithium
d. Phenytoin
e. Warfarin

Ans: **C**

91. Which one of the following cardiac congenital anomalies is associated with Wolff-Parkinson-White (WPW) syndrome?

a. Coarctation of aorta
b. Tetralogy of Fallot
c. Ventricular septal defect
d. Ebstein's anomaly of the tricuspid valve
e. Atrial septal defect

Ans: **D**

92. All are true regarding hypertrophic cardiomyopathy, Except-

a. Digoxin is helpful
b. Irregular thickness of septa
c. Dynamic obstruction
d. Double apical impulse

Ans: **A**

Radiant Notes

Paradoxical embolization

- For a right-sided thrombus (e.g. DVT) to cause a left-sided embolism (e.g. stroke) it must obviously pass from the right-to-left side of the heart
- Patent foramen oval (Most common cause)

Eisenmenger's syndrome

The reversal of a left-to-right shunt in a congenital heart defect due to pulmonary HTN.

Associated with:

- ✓ VSD, ASD, PDA

- Features:
  - ✓ Original murmur may disappear, clubbing, haemoptysis, embolism
- Management:
  - ✓ Heart-lung transplantation is required

Ebstein's anomaly

- Congenital heart defect characterized by low insertion of the tricuspid valve resulting in a large atrium and small ventricle."atrialisation' of the right ventricle"
- Ebstein's anomaly may be caused by exposure to lithium in-utero
- Associations:
  - ✓ tricuspid incompetence (pan-systolic murmur, giant V waves in JVP)
  - ✓ Wolff-Parkinson White syndrome

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93. Patient with history of recurrent falls There is history of Myocardial infarction as well, ECG shows T wave inversion in anterior leads and on examination double apical impulse, investigation to be carried out?

a. Holter monitoring
b. Echocardiography
c. ETT
d. CBC

Ans: **B**

94. A 20-year-old patient presents with recurrent episode of syncope on exertion. He has pan systolic murmur at left sternal edge and double apex beat. His father suddenly died at a very younger age. Which drug should not be given in this patient?

a. Digoxin
b. CCB
c. Beta blocker
d. Amiodarone

Ans: **A**

95. A patient presented in your OPD for some complaint on examination there was jerky pulse, large A wave JVP and ejection systolic in left sternal base pan systolic apex.

a. Pulled stenosis
b. Mitral stenosis
c. HoCM
d. Aortic sclerosis

Ans: **C**

96. A patient with HOCM was collapsed and then successfully resuscitated in the ER. What is your next step in management?

a. Beta blockers
b. Myomectomy
c. ICD Implantation
d. Surgical Ablation

Ans: **C**

97. A footballer player died on field while playing his match. There was no history of trauma, addiction or any other disease in this patient. His brother died with similar scenario, what is the most likely cause of the death:

a. Aortic aneurysm
b. Aortic dissection
c. Restrictive cardiomyopathy
d. Cardiac tamponade
e. Hypertrophic obstructive cardiomyopathy

Ans: **E**

Radiant Notes

Congestive or Dilated Cardiomyopathy

- **Most common cardiomyopathy** (90% of cases).
- Often idiopathic or familial.
- Other etiologies include: (ABCD-P)
  - Alcohol abuse (chronic)
  - B1 (Thiamine) deficiency (beriberi heart-wet Beriberi)
  - Coxsackie B virus myocarditis.
  - Doxorubicin toxicity
  - Peripartum cardiomyopathy (associated with the latter stages of Pregnancy)

Restrictive Cardiomyopathy

infiltrative processes within the myocardium that result in stiffening of the heart muscle, exemplified by cardiac amyloidosis,

Hypertrophic Cardiomyopathy

- Autosomal dominant,
- Cardiomyopathy may result in left ventricular outflow obstruction, placing the patient in **danger of syncope and even sudden death, which often occurs unexpectedly in young athletes**
- **Echo: (Mnemonic: MR-SAM-ASH)**
  - Mitral regurgitation (**MR**)
  - Systolic anterior motion (**SAM**) of mitral valve
  - Asymmetric hypertrophy (**ASH**)
- **ECG:**
  - **LVH + T Wave Inversion**
- **Other features:**
  - Jerky pulse, large A wave on JVP, double apex beat
  - **Ejection systolic murmur increase with Valsalva maneuver and decrease on squatting**

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Cardiology

98. All are true in HoCM except?

a. a wave in JVP
b. cause of death in young athlete
c. S4 audible
d. systolic dysfunction
e. Echocardiography is diagnostic

Ans: **D**

99. Heart failure in HOCM is

a. Systolic heart failure
b. Diastolic heart failure

Ans: **B**

100. A young tennis girl with occasional syncope during play her cousin was athlete too but died at the age of 20 years. Your investigation of choice for this girl will be

a. Echocardiography
b. MR
c. ECG
d. ETT
e. Angiography

Ans: **A**

101. A patient with history of syncope and sudden death history in his family, what could be the possible findings on Echocardiography?

a. Akinesia
b. Symmetrical hypertrophy
c. Systolic Anterior Motion of mitral valve
d. Severe MS

Ans: **C**

102. A young male is suspected of having HOCM. Which test will confirm the diagnosis?

a. Echocardiography
b. ECG
c. Treadmill test
d. Myocardial perfusion scanning

Ans: **A**

103. Definitive treatment of HOCM?

a. Surgical ablation
b. Myectomy
c. ICD
d. Drugs

Ans: **C**

104. 20 years old boy with sudden collapse and resuscitated, ECG performed which shows septal Q waves and Left ventricular hypertrophy, what diagnosis comes into your mind on basis of ECG findings?

a. Pulmonary embolism
b. Aortic dissection
c. Restrictive cardiomyopathy
d. Cardiac tamponade
e. Hypertrophic obstructive cardiomyopathy

Ans: **E**

105. A 26-year-old man is brought to the ED for a syncopal episode that occurred during a basketball game. On examination, systolic ejection murmur You suspect the diagnosis of HOCM and ask the patient to perform the Valsalva maneuvers while you auscultate his heart. Which of the following is most likely to occur to the intensity of the murmur with this maneuvers?

a. Decrease.
b. Increase.
c. Remain unchanged.
d. Disappear.
e. The intensity stays the same, but the heart skips a beat.

Ans: **B**

106. For diagnosing and monitoring the cause of cardiomyopathy which investigation is done?

a. Echocardiography
b. ECG
c. Cardiac catheterization
d. Perfusion scan

Ans: **A**

107. A middle age male having no-comorbids presented with shortness of breath, having dilated Left ventricle, EF is 20%, blood pressure and angiography is normal, what is most likely Diagnosis?

a. Cardiomyopathy
b. Post myocardial infarction
c. Amyloidosis
d. Hemochromatosis

Ans: **A**

108. Patient presents with Cardiomyopathy plus features of neuropathy. Most likely etiology?

a. Post Myocardial infarction
b. Diabetes
c. Alcohol
d. Coxsackie B virus

Ans: **C**

109. One scenario where patient had signs of heart failure but with preserved ejection fraction of 52% (No other hint Acc to student recall)?

a. Congestive cardiomyopathy
b. Restrictive cardiomyopathy

Ans: **B** (In restrictive cardiomyopathy can have preserved ejection fraction the mechanism of heart failure is due to impairment of compliance causing diastolic dysfunction)

110. How to differentiate between congested & restrictive cardiomyopathy

a. CT scan (cardiac CT)
b. MRI (Cardiac MRI)
c. MUGA scan

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d. Echocardiography

Ans: B

111. A 35 years old woman having multiple syncope attacks. On examination she has ejection systolic murmur and echo showed interventricular septum thickness of 3.5cm. Best treatment for her?

a. ICD
b. Beta blockers
c. Catheter ablation

Ans: A

112. Young female died after few weeks of flu like illness. Autopsy showed large dilated heart. What is the cause of her disease and death?

a. Coxsackie virus A
b. Coxsackie virus B
c. Influenza virus
d. Infective endocarditis

Ans: B

113. Patient had all risk factors for atherosclerosis came with dyspnea. workup done showed EF 20% with enlarged heart and global hypokinesia. what would you do next?

a. Coronary angiography
b. Stress test
c. Prepare for heart transplant

Ans: A (Few were with option C—even if you want to go for heart transplantation--The Heart Failure society of America, American College of Cardiology Foundation, and AHA recommend All patients should undergo coronary angiography or a functional assessment for ischemia and viability before heart transplant)

114. A patient presented with dyspnea and murmur, the murmur decrease with Valsalva and increases with amyl nitrate, diagnosis?

a. HoCM
b. Aortic stenosis
c. Aortic regurgitation
d. Mitral regurgitation

Ans: B

- ✓ Tricky question---explanation
- ✓ Amyl nitrate increases the intensity of
  - Aortic stenosis, hypertrophic obstructive cardiomyopathy, and mitral valve prolapse.
- ✓ Amyl nitrate decreases the severity of
  - Aortic regurgitation, mitral regurgitation, and ventricular septal defects
- ✓ Valsalva maneuver decreased the intensity of all murmurs except systolic murmur of hypertrophic cardiomyopathy & mitral valve prolapse which becomes louder

115. Left main bronchus is made prominent by which chamber of heart

a. Left Atrium
b. Left ventricle
c. Right atrium
d. Right ventricle

Ans: A

116. Post-mortem autopsy finding of Coxsackie virus?

Ans:

- ✓ None of the options were recalled by any student
- ✓ Correct option should be either myocarditis or cardiomyopathy—if any such option there click it

117. Ejection systolic murmur which worsen on standing?

a. Aortic stenosis
b. HoCM
c. Mitral regurgitation
d. Aortic regurgitation

Ans: B

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Cardiology

118. Young boy presents with ECG that shows RBBB and frequent ventricular ectopics. What disease is he suffering from?

a. Long QT syndrome
b. Brugada syndrome
c. RV arrhythmogenic cardiomyopathy

Ans: **C**

119. A man is investigated for sudden collapse. ECG shows partial right bundle branch block and ST elevation in anterior leads. Likely diagnosis:

a. Catecholaminergic polymorphic ventricular tachycardia
b. Hypertrophic obstructive cardiomyopathy
c. Arrhythmogenic right ventricular cardiomyopathy
d. Brugada syndrome

Ans: **D**

120. Most effective treatment for Brugada syndrome:

a. Implantable cardiac defibrillator
b. Beta blockers
c. Catheter ablation

Ans: **A**

121. A 1-year-old girl is noted to have a continuous murmur, loudest at the left sternal edge. She is not cyanosed. A diagnosis of patent ductus arteriosus is suspected. What pulse abnormality is most associated with this condition?

a. Bisferiens pulse
b. Collapsing pulse
c. Pulsus paradoxus
d. Jerky pulse
e. Pulsus alternans

Ans: **B**

Radiant Notes

Arrhythmogenic right ventricular cardiomyopathy (ARVC)

- Autosomal dominant Inherited cardiovascular disease which may present with syncope or sudden cardiac death.
- second most common cause of sudden cardiac death in the young after hypertrophic cardiomyopathy.
- right ventricular myocardium is replaced by fibrofatty tissue
- Investigation:
  - ECG abnormalities:
    - In V1-3, typically T wave inversion.
    - **An epsilon wave** is found in about 50% of those with ARV - this is best described as a terminal notch in the QRS complex
  - Magnetic resonance imaging is useful to show fibrofatty tissue

Brugada syndrome

- Autosomal dominant Inherited cardiovascular disease which may present with sudden cardiac death.
- More common in Asians
- Due to mutation in myocardial sodium ion channel protein
- ECG findings
  - Convex ST segment elevation > 2mm in > 1 of V1-V3 followed by a negative T wave
  - Partial right bundle branch block

Catecholaminergic polymorphic ventricular tachycardia (CPVT)

- Autosomal dominant Inherited cardiovascular disease associated with sudden cardiac death.
- Due to defect in the ryanodine receptor (RYR2)
- Findings:
  - Exercise or emotion induced polymorphic ventricular tachycardia resulting in syncope
  - Sudden cardiac death
  - Symptoms generally develop before the age of 20 years

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122. One strong pulse alternate with one weak pulse in patient with dyspnea. ECG showed normal rhythm, type pf pulse is:
a. Pulsus bisferiens
b. Water hammer pulse
c. Pulsus paradoxus
d. Pulsus alternans

Ans: D

123. A patient presented in your OPD for some complaint on examination there was jerky pulse, large A wave JVP and ejection systolic in left sternal base pan systolic apex.
a. Pulled stenosis
b. Mitral stenosis
c. HoCM
d. Aortic sclerosis

Ans: C

124. Giant V wave in JVP is seen in case of:
a. Tricuspid regurgitation
b. Mitral regurgitation
c. Cor pulmonale
d. Constrictive pericarditis
e. Tricuspid stenosis

Ans: A

125. Which JVP wave will be absent in mitral stenosis
a. V wave
b. A wave
c. X descent
d. Y descent

Ans: B

126. Which of the following features would indicate cardiac tamponade rather than constrictive pericarditis?
a. No Y descent on JVP
b. Hypotension
c. Raised JVP
d. Bradycardia
e. Muffled heart sounds

Ans: A

127. Y descent is seen in
a. Cardiac tamponade
b. Constrictive pericarditis
c. Tricuspid regurgitation
d. Aortic stenosis

Ans: B

128. Giant "a" wave in cardiac cycle in with right ventricular hypertrophy in:
a. Tricuspid regurgitation
b. Mitral regurgitation
c. Mitral stenosis
d. Tricuspid stenosis

Ans: D

129. TB patient on ATT for 6 months, Kussmaul sign positive raised JVP with rapid Y descent, liver failure massive ascites and pleural effusion too, diagnosis?
a. Hypertrophic Cardiomyopathy
b. Restrictive cardiomyopathy
c. Constrictive pericarditis

Ans: C

130. Canon 'a' wave is not seen in:
a. Complete heart block
b. Ventricular ectopic beats
c. Tricuspid regurgitation
d. Pulmonary Hypertension

Ans: C

Radiant Notes

Pulsus Paradoxus
- >10mmHg fall in systolic blood pressure during inspiration---faint or absent pulse on inspiration
- Seen in Cardiac tamponade, severe asthma

Slow Rising Pulses (Pulsus Parvus Et Tardus)
- Seen in Aortic stenosis

Collapsing Pulse (Water-Hammer Pulse)
- Seen in Aortic regurgitation
- Patent ductus arteriosus
- Hyperkinetic (anemia, thyrotoxic, fever, exercise/pregnancy)

Pulsus Alternans
- Pulsus alternans is characterized by a strong and weak beat occurring alternately
- Severe LVF

Pulsus Bisferiens
- Pulsus bisferiens is a rapid rising, twice beating pulse
- Aortic valve disease

Jerky Pulse
- Seen in HOCM

Pathologies of Jugular venous curve

a wave→ Absent in atrial fibrillation, mitral stenosis
Giant "a" wave→ Tricuspid Stenosis
Giant "v" wave→ Tricuspid Regurgitation
x descent → Absent in tricuspid regurgitation
y descent →Prominent in constrictive pericarditis, absent in cardiac tamponade

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131. A patient presented with complaint of chest pain, with no significant ECG changes and elevated troponin, diagnosis?

a. Stable angina
b. Unstable angina
c. Non-ST elevation myocardial infarction
d. ST elevation myocardial infarction

Ans: **C**

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132. 44 years old lady diabetic and hypertensive presented with chest pain after a brisk walk, on examination she is vitally stable. ECG shows ST elevation V1-V4, diagnosis?

a. Pericarditis
b. Unstable angina
c. Non-ST elevation myocardial infarction
d. ST elevation myocardial infarction

Ans: **D**

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133. An old lady has chest pain and pain in right arm occurring for last many days but stays only for 10 minutes, then it gradually decreases. Cause?

a. Angina
b. Anxiety
c. MI
d. Pericarditis
e. Aortic dissection

Ans: **A**

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134. A 48 years old female presents with SOB and pain in the chest radiating to right arm. She also had same sign and symptoms developed during gardening one day ago. Pain settled just after 10 minutes. Your diagnosis:

a. Angina
b. Anxiety
c. Cervical spondylosis

Ans: **A**

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135. 48 years old male came with complaint of Central chest pain with profuse sweating and dizziness, what diagnosis comes into your mind:

a. GERD
b. Myocardial infarction
c. Aortic dissection

Ans: **B**

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136. Female patient presented with chest pain radiating to left arm few days after the death of her father, she had history of multiple hospital visits for non-specific complaints, diagnosis

a. Myocardial infarction
b. Somatisation disorder.
c. Aortic dissection

Ans: **B**

Radiant Notes

Acute Coronary Syndrome: (Term used to describe unstable angina, NSTEMI and STEMI)

Unstable Angina	NSTEMI (Subendothelial Infarct)	STEMI (Transmural Infarct)
Rapidly worsening angina (crescendo angina)	Myocardial necrosis (coagulative) limited to the interior one-third of the wall of the left ventricle.	Myocardial necrosis (coagulative) entire ventricular wall from the endocardium to the epicardium.
Negative cardiac enzymes	Elevated cardiac enzymes	Elevated cardiac enzymes
ST depression with/without T-wave inversion	ST depression with/without T-wave inversion	ST segment elevation

137. Patient of angina pectoris best way to diagnose

a. Clinical history
b. Physical exam
c. ECG
d. Echo

Ans: **A**

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138. A 56-year old woman presents to the A&E complaining of severe pain in her lower jaw and neck for 5 hours. She took ibuprofen when the pain started, but the drug provided no relief. She is profusely diaphoretic and has vomited once. She is obese and has a history of hypertension and diabetes mellitus. Her fresh ECG shows left bundle branch block, while her previous ECG was normal. Which one of the following is the best next investigation?

a. Echocardiography
b. Exercise tolerance test
c. Random blood sugar
d. Serum troponin I
e. X-ray cervical spine

Ans: **D**

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139. A 53-year-old comes to you in emergency department with one-hour history of chest pain. If you suspect MI, then which of the following investigation is raised first following an MI?

a. Myoglobin
b. CK-MB
c. Trop-I
d. LDH

Ans: **A**

140. A patient presented to you in emergency with complaint of chest pain. On ECG there is ST elevations in V1-4. He also had myocardial infarction 3 days back, which test you would do to confirm reinfarction?

a. LDH isoenzyme
b. Ck- isoenzyme
c. Myoglobin
d. Trop I

Ans: **B**

141. A man presented to you in hospital emergency with history of typical chest pain came for 2-hours. What tests can be done after this 2-hour period that will help in diagnosis

a. Cardiac enzymes
b. ECG
c. ECHO
d. Trop T

Ans: **A**

- ✓ ECG would never help you in diagnosis of unstable angina and NSTEMI—it's not necessary that every patient with chest pain is STEMI---still I can count ten of reason where there would be ST elevation but not true MI
- ✓ While cardiac enzymes including myoglobin rises in 1 hours would be beneficial aid in your diagnosis
- ✓ Previous similar MCQ had myoglobin as an option as well

142. A patient has chest pain from 4 hours which is radiating to his left arm. ECG shows ST elevation. Which cardiac enzyme will be raised?

a. Trop I
b. CK-MB
c. Myoglobin
d. LDH

Ans: A

143. For monitoring heart of ischemic heart disease patient with end stage renal disease best marker is

a. Myoglobin
b. LDH
c. CK-MB
d. Trop T
e. Trop I

Ans: **E**

144. 76-year-old male is admitted to the emergency department with a 30-minute history of central chest pain radiating to jaw and left arm. ECG confirms ST elevation in leads II, III and AVF. Which coronary artery is most likely to be affected?

a. LAD
b. Left main stem
c. Left circumflex
d. Right coronary artery

Ans: **D**

145. A 50 years old female presented to ER where she was diagnosed with lateral wall MI. Which artery is involved?

a. LAD
b. RCA
c. LCX
d. Anterior interventricular artery
e. Left coronary artery

Ans: **C**

Radiant Notes

Cardiac enzymes

- ❖ **Even though these are now rarely used after the introduction of highly sensitive Trop-I which begins to rise after or within 1 hours—** but they are asked in exams as such
- ❖ Most specific=Troponin I > Trop T
- ❖ Most sensitive =Myoglobin
- ❖ CK-MB→Useful in diagnosing reinfarction following acute MI, because levels return to normal after 48 hours

	Initial elevation	Mean time to peak	Return to baseline
Myoglobin	1-3 hours	6-9 hours	12-24 hours
CK-MB	3-4 hours	12-24 hours	2 days
Troponin I	4-6 hours	10-24 hours	7 days
LDH	8-12 hours	24-48 hours	10-14 days

- ❖ **ECG Leads presentation**
  - o Septal → V1, V2---LAD artery involved
  - o Anterior → V3, V4---- LAD artery involved
  - o InFerior leads → Lead II, Lead III, and avF---- RCA artery involved
  - o Lateral leads→ Lead I, avL, V5 and V6---LCX artery involved

Cardiology

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146. 1st agent to be given in patient with Myocardial Infarction

a. Nitrates
b. Aspirin
c. Oxygen
d. Streptokinase
e. LMWH

Ans: B

147. In NSTEMI the most appropriate after aspirin in term of management is:

a. Heparin
b. Oxygen
c. Nitrate
d. Morphine
e. Beta blocker

Ans: A

148. A 40 years old man presented with chest pain for one hour while playing tennis. ECG shows ST elevation of 2mm in chest leads. What will you administer?

a. IV nitrates
b. IV heparin
c. Thrombolysis

Ans: C

149. A patient presents to you in emergency room with complain of chest pain and sweating. ECG done. You make a diagnosis of unstable angina. Initial management will be

a. Beta blocker
b. Aspirin
c. Heparin
d. Thrombolysis
e. PCI

Ans: B

150. A man who is previously known case of angina now presents to you with pain which occurs at rest. Drug given should be

a. Aspirin
b. IV nitrates
c. Heparin

Ans: A

151. A 60-year-old male having severe chest pain for last 6 hours, ECG shows Q wave Myocardial Infarction, what is the best initial management in a tertiary care hospital?

a. IV nitrate
b. IV nitrate with heparin
c. Sk followed by heparin
d. TPA (tissue plasminogen activator) followed by heparin
e. Angioplasty

Ans: E (Q wave indicates STEMI---in tertiary care hospital best option is to do angioplasty)

Radiant Notes

For ST ELEVATION MYOCARDIAL INFARCTION

- Aspirin
  - Loading dose: 162-325mg Should be given
  - Maintenance dose: 81 mg daily lifelong
- $P2Y_{12}$ receptor—(Clopidogrel)
  - Loading dose: 300mg
  - Maintenance dose: 75mg for 1 year
- Anticoagulant
  - Enoxaparin (anticoagulatn of choice) or
  - Unfractioned hepatin and fondaparinux
- PCI or thrombolytic
  - PCI ideally should be perfomed with in 90 minutes---but time duration for primary PCI can be performed upto 12 to 24 hours
  - Fibrinlytics window period is upto 12 hours—but most useful if given within 120 mintutes

For NSTEMI and unstable angina

- Aspirin
  - Loading dose: 162-325mg Should be given
  - Maintenance dose: 81 mg daily lifelong
- $P2Y_{12}$ receptor—(Clopidogrel)
  - Loading dose: 300mg
  - Maintenance dose: 75mg for 1 year
- Anticoagulant
  - Enoxaparin (anticoagulatn of choice) or
  - Unfractioned hepatin and fondaparinux
- Fibrinolytic/thrombolytic
  - No role of fibrinolytics/thrombolytics

For Stable angina

- Aspirin on arrival and nitrates to abort attack
- Afterwards---Beta blocker or CCB –first line agent

Choice of thrombolytic

- Alteplase (tPA) more superior than streptokinase
- Because of the possible development of antibodies, SK should not be administered to a patient who has received it in the past (>5 days and less than a year)

Remember the difference

- Thrombolytics in MI can be given upto 12 hours—no or little benefit afterwards
- Thrombolytics in stroke can be given upto 3-4.5 hours ---no or little benefit afterwards

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152. Smoker with severe chest pain, first step in management
- a. ABC protocol
- b. Antiplatelets
- c. Analgesics

Ans: **A**

153. 51-year patient with chest pain radiating to arm along with diaphoresis. He is haemodynamically stable. ECG shows acute anterior wall MI immediate next step
- a. SK
- b. Coronary angiography
- c. Oxygen
- d. IV morphine

Ans: **D** (relieve his pain first followed by streptokinase to open the obstructed artery)

154. A patient presenting with severe excruciating chest pain with diaphoresis for last 1-hour ECG is suggestive of Myocardial Infarction, what next best Treatment is given?
- a. O2 inhalation
- b. Morphine
- c. SK
- d. IV SK with heparin
- e. PCI

Ans: **E** (best treatment is always PCI—highest mortality benefit)

155. 35-year-old female presented with complaint of ST elevation inferior wall Myocardial Infarction; she was thrombolysed after 2 hours patient still complaining of severe chest pain. ECG shows still ST elevation. What is next best appropriate management for this patient
- a. Morphine
- b. Repeat Streptokinase
- c. IV nitrates
- d. Rescue PCI

Ans: **D**

156. A 50 years old smoker presented to the ED with crushing substernal chest pain for 6 hours radiating to arm with diaphoresis. The pain does not change with position or respiration. He has a significant past history of pain with exertion for the last few months. He also has a past medical history of T2DM and HTN. On examination, he is hemodynamically stable, ECG shows ST elevation in leads V2-V4. What is the best treatment for this patient in tertiary care hospital?
- a. PCI
- b. Streptokinase
- c. IV heparin
- d. tPA (alteplase)
- e. IV morphine

Ans: **A**

157. An old diabetic hypertensive patient presents to you in emergency with c/o retrosternal chest pain lasting for 6 hours, ECG done showing Q waves on ECG and anterior wall MI. what is the next step in this patient?
- a. tPA with heparin
- b. Coronary angiography
- c. I/V Nitrates along with aspirin
- d. I/V Nitrates along with Heparin
- e. I/V Streptokinase along with aspirin

Ans: **E** (Next step is he should be loaded first with dual antiplatelets—followed by giving thrombolytic to open the occluded artery)

158. Middle age female known diabetic presented with complaint of chest pain, ECG normal, Trop I raised, likely treatment to be given
- a. IV heparin + beta blocker + aspirin
- b. I/V Nitrates along with Heparin
- c. I/V Streptokinase along with aspirin
- d. Tissue plasminogen activator

Ans: **A**

159. In ischemic heart disease, thrombolysis is most beneficial in the management of
- a. Inf wall MI
- b. NSTEMI
- c. Anterior wall MI
- d. Pathological Q waves inferior wall MI
- e. ST depression and T wave inversion

Ans: **C**

160. Old age hypertensive with altered consciousness having BP 160/90 Platelets 120,000, Patient taking anti-platelets and has Ischemic stroke on CT scan what is contraindication to not start thrombolytics?
- a. Ischemic stroke
- b. Old Age
- c. Low platelets
- d. Hypertension

Ans: **A**

161. Patient known case of angina, presented with complaint of chest pain, he is already on 2 drugs i.e. calcium channel blockers and beta blockers but still symptomatic, next step in management?
- a. Add ACE inhibitors
- b. Echocardiography
- c. Angiography
- d. Exercise tolerance test

Ans: **C**

162. A patient known case of angina presented with complaint of chest pain. You ordered and ECG and cardiac enzymes, both of which are normal, treatment to be given?
- a. Heparin
- b. Aspirin
- c. Nitrates

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d. Thrombolytics

Ans: B

163. Male with chest pain and SOB. ECG shows T wave inversion in leads II, III aVF, what to do:

a. Beta blocker
b. Aspirin
c. I/V nitrates
d. Thrombolytics

Ans: B

164. A Labourer presented with severe retrosternal chest pain for 30 mins, diaphoresis & cold extremities. On initial assessment his pulse is feeble and blood pressure of 90/60, likely diagnosis:

a. Myocardial infarction
b. Dehydration
c. Pleuritis
d. Pericarditis

Ans: A

165. Person presented to you with complaint of ongoing chest pain and was diagnosed a case of ST elevation myocardial infarction. On examination his blood pressure is 220/120 mmHg, first step in management?

a. Oxygen
b. Sublingual GTN
c. IV nitroprusside

Ans: **C** (Hypertensive emergencies **require immediate BP reduction** by 20% to 25% to prevent or minimize further end-organ damage)

166. Which one of the following has no role in NSTEMI?

a. Aspirin
b. Clopidogrel
c. Nitrates
d. tPA
e. Heparin

Ans: **D**

167. A middle-aged smoker has a complain of heaviness in left arm after start of brisk walk. His ECG was normal. Next best step to reach the diagnosis is

a. ETT
b. ECHO
c. Angiography
d. Plethysmography

Ans: **A**

168. A patient presented with exertional dyspnea on walking 100 yards and chest pain. ECG and Echo was normal. Next test to reach diagnosis will be:

a. Thallium Scan & ETT
b. ECG
c. CXR

Ans: **A**

169. A 32-year-old man complains of retrosternal chest pain of 1-day duration, pain is intermittent and sharp. he also has cough and low-grade fever, what is likely diagnosis:

a. Angina pectoris
b. Costochondritis
c. Myocardial infarction
d. Acute pericarditis
e. Pulmonary infarction

Ans: D

170. Female patient with pleuritic chest pain and fever. On examination she has distant heart sounds. chest x-ray reveals clear lung fields with a dilated cardiac silhouette. Next investigation to be done?

a. ECG
b. CT chest
c. Echocardiography

Ans: **C**

171. A 58-year-old male presented with chest pain and dizziness, on examination BP 90/50 mmHg, Respirator rate 16/min, sats 98%. ECG shows complete heart block and ST elevation in lead II, III, avF, best step in management?

a. Temporary pacemaker
b. Percutaneous coronary intervention
c. I/V nitrates
d. Glycoprotein IIb/IIIa inhibitors

Ans: **B**

- ✓ If asked 1st step in management –temporary pacemaker
- ✓ If asked best step---PCI

172. In CABG which vessel is best choice for grafting in LAD mainly?

a. Left internal mammary artery
b. Saphenous vein
c. Right femoral artery
d. Left Axillary artery

Ans: **A** (Left Internal Mammary Artery (LIMA), also known as the Left Internal Thoracic Artery (LITA)

173. Patient admitted in ward after a Myocardial infarction, his labs showed increased total cholesterol, treatment?

a. Repeat cholesterol at discharge and then start statin
b. Dietary measures and repeat cholesterol after 3 months
c. Start Statin immediately

Ans: **C**

174. Patient has history of MI one month ago. Now his CBC shows neutropenia. What is the cause?

a. Aspirin
b. Clopidogrel
c. Statin

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d. Ticlopidine

Ans: D

175. Which one of the following is a significant risk factor for IHD?

a. Diabetes mellitus
b. Smoking
c. Hypertension

Ans: A

✓ Most common risk factor HTN
✓ Most-Worse/significant Risk factor D.M
✓ Most aggressive risk factor Hyperlipidemia

176. Which of the following is not a risk factor for ischemic heart disease?

a. Smoking
b. Alcohol
c. Diabetes
d. Male gender

Ans: B

177. A young person presents to you in ER with severe chest pain. He used to take cocaine on regular basis but for last few days he had been using it in large amounts. ECG was done showing ST elevation. What do you do now?

a. PCI
b. IV heparin
c. Thrombolysis
d. Aspirin 300mg, clopidogrel 3000mg and LMWH.

Ans: D

178. A young male presents to you with chest pain after taking large doses of cocaine. His ECG shows ST elevation of 4mm in anterior leads. He was managed as acute MI. there is no previous cardiac history. Which of the following should be avoided?

a. GTN
b. Beta blockers
c. Aspirin
d. Diamorphine
e. Diltiazem

Ans: B

179. The most common cause of stokes Adam attack is

a. Complete heart block
b. Ventricular tachycardia
c. Dehydration
d. Sinus tachycardia
e. Drug effect

Ans: A

Radiant Notes

Cocaine Induced Myocardial Infarction

- ST-segment elevation associated with cocaine use includes the routine administration of antiplatelets and heparin. Aggressive use of sublingual and intravenous nitroglycerin or intravenous calcium channel blockers.
- **β-Blockers are contraindicated in patients with cocaine-induced acute MI.**

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Cardiology

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180. A patient who had Myocardial infarction 1 month back, now developed severe chest pain he is suspected to have Dressler syndrome, ECG shows ST segment elevation in all leads, what is the nature of disease?
   a. Bacterial
   b. Viral
   c. Fungal
   d. Autoimmune

Ans: D

181. An old male present to you in emergency department with history of chest pain and fever for 3 days. He had a history of Myocardial infarction about 2 months back. What is your diagnosis?
   a. Dressler syndrome
   b. Myocarditis
   c. Tuberculous Pericarditis
   d. Cardiac tamponade

Ans: A

182. Patient with few days of fever and left sided chest pain. ECG shows ST elevation in all leads, most likely is?
   a. Rheumatic fever
   b. Endocarditis
   c. Pericarditis
   d. Myocarditis

Ans: C

183. Middle age male complaining of chest pain, on ECG found to have ST elevation in all leads, most common cause is?
   a. Bacterial
   b. Viral
   c. Fungal
   d. Autoimmune

Ans: B

184. ECG finding in acute pericarditis is:
   a. ST elevation with upward convexity
   b. ST elevation with upward concavity.
   c. Depressed ST segment
   d. Upsloping PR interval
   e. Long QT interval

Ans: B

185. Which one of the following is not a characteristic feature of viral pericarditis?
   a. ST segment depression
   b. PR depression
   c. Generalized ST elevation
   d. Pain improves by leaning forward
   e. Raised ESR

Ans: A

186. A patient has presented to you in emergency department with sudden SOB. On examination his JVP is raised. And there is absent apex beat with muffled heart sounds. Best management step?
   a. CXR
   b. Pericardial paracentesis
   c. Chest intubation
   d. ECG
   e. Echocardiography

Ans: B

Radiant Notes

Post Myocardial infarction complications

- **Day 1-**
  - ✓ Ventricular arrhythmia, HF, cardiogenic shock.
- **Day 1-3**
  - ✓ Postinfarction fibrinous pericarditis.
- **Day- 3 – 14**
  - ✓ Myocardial rupture
  - ✓ Cardiac tamponade (Becks triad)
    - Hypotension
    - Dilated neck veins.
    - Muffled heart sounds.
  - ✓ Acute MR
  - ✓ LV pseudoaneurysm (risk of rupture).
- **2 weeks to several months**
  - ✓ True Ventricular aneurysm (risk of mural thrombus)
  - ✓ Dressler's syndrome
    - **Autoimmune fibrinous pericarditis**
    - Characterised by pleuritic pain and fever.
    - Treated with NSAID's

Acute Pericarditis

- It refers to Inflammation of the pericardium
- Clinical features:
  - Sharp pain, aggravated by inspiration and relieved by sitting up and leaning forward.
- Causes→ Viral—most common (Coxsackievirus), Autoimmune (eg. SLE, rheumatoid arthritis), acute STEMI or Dressler syndrome
- ECG:
  - **Widespread concave (saddle shaped) ST elevation**
  - **PR depression= most specific ECG marker for pericarditis**

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187. A 55-year-old male with chest pain and fever after one month of MI, ECG shows ST elevation treatment?

a. Thrombolytics
b. NSAID's
c. Clopidogrel

Ans: B

188. Which of the following signs will confirm acute pericarditis?

a. Raised JVP
b. Pulsus paradoxus
c. Pericardial friction rub
d. Raised BP on lying supine

Ans: C

189. A 37-year-old patient presented with substernal chest pain that has been slowly getting worse over the last few days. He also tells you that he had upper respiratory tract infection 3 weeks ago. On further evaluation, he tells that the pain is constant, worsens when he is lying down forward. On examination, a friction rub is heard and the lungs are clear. What will be your diagnosis?

a. Viral pericarditis
b. Acute MI
c. Tuberculosis
d. Ventricular aneurysm
e. Pericardial effusion

Ans: A

190. A patient with extensive pulmonary TB, suddenly developed facial puffiness with pedal edema and hepatomegaly. JVP was raised. What is the diagnosis if patient does not improve with ATT?

a. Intestinal TB with Malabsorption
b. Poor intake and malnutrition
c. Constrictive pericarditis

Ans: C

191. Female patient develops shortness of breath, with raised JVP, after viral infection, most likely cause is:

a. Pericarditis
b. Myocarditis
c. Acute Myocardial infarction

Ans: B

192. A 44-year-old male patient presented to you with high grade fever and shortness of breath. On examination **JVP is raised with muffle heart sounds. BP is 80/60 what is most likely diagnosis?**

a. Pericarditis
b. Cardiac tamponade
c. Myocardial infarction
d. COPD

Ans: B

193. A patient with complaint of chest pain which relief on bending forwards, on Xray thickened pericardium and pericardial calcification is seen. These findings are seen in which of the following?

a. Cardiac tamponade
b. Constrictive pericarditis
c. Restrictive cardiomyopathy
d. Right ventricular myocardial infarction

Ans: B

194. What is the first line treatment for patient with viral pericarditis?

a. Antibiotics
b. Acyclovir
c. Paracetamol
d. NSAIDs

Ans: D

195. The most common viral syndrome of pericarditis is caused by:

a. Herpes simplex virus
b. Respiratory syncytial virus
c. Epstein–Barr virus
d. Coxsackie B virus

Ans: D

196. Patient few hours after mitral valve replacement now presented with dyspnea and hypotension, investigation to be done?

a. Transthoracic Echocardiography
b. Transesophageal Echocardiography
c. X ray chest

Ans: A (suggestive of cardiac tamponade)

197. A female patient presented with complaint of chest pain. ECG done which shows inferior wall Myocardial infarction with a heart rate of 40/min. What is best initial treatment in this case?

a. Observe and monitor
b. IV fluids
c. Inj adrenaline
d. Pacemaker
e. Inj atropine

Ans: E

198. A patient who is having inferior wall myocardial infarction, developed signs and symptoms of heart failure, on examination HR 38, BP 80/60 mmHg, how will you manage this patient?

a. IV atropine
b. IV fluid
c. Heparin
d. Antibiotics

Ans: A

199. Most common finding of constructive pericarditis

a. Ascites
b. Hepatomegaly
c. Pericardial knock

Ans: C

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Cardiology

200. Finding of myocardial stunning scan in LV dysfunction

a. Reduced perfusion, reduced metabolism and function
b. Normal perfusion, reduced metabolism and function

Ans: B

201. Finding that is considered indicative of ischemia on ETT?

a. Depression of the J point
b. Ectopics
c. ST segment depression of ≥2mm

Ans: C

202. A patient was asked to undergo exercise tolerance test, which point would decide to stop ETT?

a. 2mm ST depression
b. 3mm ST depression
c. 1mm ST elevation

Ans: B

203. Absolute contraindication of Exercise tolerance test?

a. HoCM
b. Obesity
c. Life threatening arrythmias
d. Myocardial infarction few weeks ago

Ans: C

204. 44-year-old lady has chest pain, she is known case of diabetes mellitus, you ordered an ECG which is normal, to rule out ischemia what would you do next?

a. Exercise tolerance test
b. Echocardiography
c. Cardiac MR

Ans: A

205. A 52-year-old male presented with complaint of chest pain on and off, he has history of old ST elevation myocardial infarction, on ECG there are Q waves, what to do next?

a. Exercise tolerance test
b. Thallium scan
c. Echocardiography

Ans: B

206. A middle-aged male smoker has complaint of heaviness in left arm after a start of brisk walk and relived by rest. ECG done which was normal. The most appropriate next step to reach the diagnosis will be

a. Exercise tolerance test
b. ECHO
c. Angiography
d. Plethysmography

Ans: A

Radiant Notes

ETT (Exercise tolerance test)/ Exercise ECG

- Indications:
  - Assessing patients with suspected angina
  - Risk stratifying patients following MI (More than 7 days ago) & HOCM
- Contraindications

Absolute	Relative
❖ Myocardial infarction less than 7 days ago ❖ Life threatening arrythmias ❖ Severe aortic stenosis ❖ Aortic dissection ❖ Acute pulmonary embolism	❖ Tachyarrhythmias ❖ HoCM ❖ Systolic Hypertension greater than 180mmmHg ❖ Electrolyte imbalance ❖ LBBB (this would make the ECG difficult to interpret)

- Considered positive for ischemia
  - ≥1 mm horizontal or downsloping ST segment depression
- Stop if:
  - Exhaustion/ patient request
  - Sever limiting chest pain
  - >3mm ST depression, >2mm ST elevation
  - Systolic BP > 230mmHg or systolic BP falling > 20 mmHg
  - Attainment of max heart rate which is 220
  - Arrhythmias develop

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207. 27-year-old male is taken to the Emergency Department on Monday. On ECG atrial fibrillation is present, there is no underlying heart pathology, what is the most likely cause for atrial fibrillation?
   a. Poisoning
   b. Alcohol

Ans: B (holiday heart syndrome)

208. Drug most useful in preventing intermittent atrial fibrillation to convert into continuous atrial fibrillation is:
   a. Beta blocker
   b. Digoxin
   c. Calcium channel blockers
   d. Amiodarone

Ans: A

209. An old patient presented with chronic atrial fibrillation with rapid ventricular rate, which one of the following is the best treatment for him?
   a. Digoxin
   b. Beta blockers
   c. Amiodarone
   d. Diuretics

Ans: B

210. Middle age female presented with complaint of palpitation, on ECG there is regular rhythm with saw tooth appearance in Inferior leads, most likely diagnosis?
   a. Atrial fibrillation
   b. Atrial flutter
   c. Excitation of accessory pathway

Ans: B

211. Post myocardial infarction patient presented with shortness of breath, raised JVP. On ECG there is atrial fibrillation with HR=140/min, what is appropriate step in management?
   a. Beta blockers
   b. Diuretics
   c. Ca-channel blockers
   d. Digoxin

Ans: D

212. A patient presented with complaint of palpitation and found to have atrial fibrillation, on examination his BP 70/40, next step in management?
   a. Beta blockers
   b. DC cardioversion
   c. Ca-channel blockers
   d. Digoxin

Ans: B

Radiant Notes

Atrial Fibrillation (AE)

- **ECG:**
  - **Irregular QRS complex**
  - **Absent P waves**

Management

- Hemodynamically unstable patients—DC shock
- Hemodynamically stable patients
  - Step: 1 Rate control: Beta-blocker or calcium channel blocker (orally or intravenously) is usually the first-line agent
  - **Digoxin should be used if there is co-existing heart failure**

Step 2: Prevention of thromboembolic complications --by CHA_2DS_2-VASc (no need in Mitral stenosis—if mitral stenosis starts anticoagulation irrespective of score)

✓ Score = 1 = aspirin
✓ Score ≥2= anticoagulation

C	CHF or LVEF <40%	1
H	Hypertension	1
A_2	Age ≥75 years	2
D	Diabetes mellitus	1
S_2	Stroke or TIA	2
V	Vascular disease (previous MI peripheral artery disease, or aortic plaque)	1
A	Age 65-74 years	1
S	Female Sex	1

Step 3: Rhythm control & Anticoagulation

- Electrical cardioversion or DC cardioversion
- Pharmacological cardioversion can be done by **Class III antiarrhythmics** (Mnemonic—AIDS ---Amiodarone, Ibutilide, Dofetilide, Sotalol) and Class IC (flecainide, and propafenone)

Wolff-Parkinson-White (WPW) Syndrome

- It is characterized by premature excitation of the ventricles due to an accessory pathway from the atria known as "bundle of Kent (can be in right or left atrium)"
- Catheter ablation = treatment of choice
- Hemodynamically unstable = electrical cardioversion
- Hemodynamically stable = Pharmacologic Therapy (procainamide, amiodarone etc)
  - **Do not use drugs that slow AV node conduction** (digoxin, β-blockers, verapamil) as this may cause preferential conduction through the bypass tract and precipitate VF
- ECG characteristics:
  - **Shortened PR interval (<120 mSec)**
  - Delta wave (slurring of QRS complex)

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Cardiology

213. 60 years old Patient presented to you with Transient ischemic attacks (TIA), on ECG he is having atrial fibrillation, what treatment he should be started on:

a. Digoxin
b. Warfarin
c. Aspirin

Ans: **B**

214. An old man complaining of lethargy and palpitations for many days. On examination chest is clear, blood pressure normal while his pulse is 130 /min, irregularly irregular. Which one of the following will most likely control his heart rate?

a. Beta blockers
b. Amiodarone
c. Amlodipine
d. Digoxin

Ans: **A**

215. 62 years old male, history suggestive of ischemic heart disease, on examination there is bilateral basal crepitation, blood pressure of 120/80, and irregularly irregular pulse, drug likely to be given:

a. Digoxin
b. Diuretic
c. Furosemide + digoxin
d. Metoprolol

Ans: **C**

216. Female presented with atrial flutter and BP 80/60, treatment?

a. Catheter ablation
b. DC cardioversion
c. Lidocaine
d. Amiodarone

Ans: **B**

217. Patient in emergency having atrial fibrillation with WPWs. She is having no chest pain and no shortness of breath. Chest is clear, blood pressure 120/80, heart rate 160/min. best treatment for her?

a. Adenosine
b. Sotalol
c. Digoxin
d. Flecainide

Ans: **D**

218. The drug of choice in patients with Wolff-Parkinson-White syndrome with atrial fibrillation is?

a. Digitalis
b. Procainamide
c. Verapamil
d. Adenosine

Ans: **B**

219. A young male presents to you with right sided weakness for 12 hours, CT brain rules out hemorrhage. his pulse is 90/min and it is irregularly irregular. his B/P is 150/94 mmHg Echo shows no valvular lesion. what is most appropriate treatment?

a. Aspirin
b. Warfarin
c. Clopidogrel
d. Dipyridamole

Ans: **A** (start on anticoagulant (warfarin) after 14 days)

220. A 26-year-old female is admitted to hospital with palpitations. ECG shows a shortened PR interval and wide ORS complexes associated with a slurred-up stroke seen in lead II. What is the definitive management of this condition?

a. Lifelong aspirin
b. AV node ablation
c. Permanent pacemaker
d. Accessory pathway ablation

Ans: **D**

221. A Patient was brought in emergency room with dyspnea and palpitation, on examination pulse 110/min and is irregularly irregular, Blood pressure 150/100 mmHg and wheezy chest. While serum creatinine 4.5mg/dL best drug for treatment?

a. Diltiazem
b. Verapamil
c. Atenolol

Ans: **B**

222. Lady with the history of Asthma is brought to the Emergency department with palpitation, ECG shows atrial fibrillation, Which drug will you give now?

a. Bisoprolol
b. Metoprolol
c. Verapamil
d. Digoxin

Ans: **C**

223. Patient was anticoagulated for 3 weeks before cardioversion, after cardioversion for how long anticoagulation should be continued?

a. 1 month
b. 3 months,
c. 6 months

Ans: **A**

224. Air embolism initial management?

a. Sit upright
b. Legs upward
c. Insert needle into atria
d. Left lateral
e. Right lateral

Ans: D (Durant maneuver)

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225. A young patient with presents with palpitations. On examination he is tachycardiac. ECG showed narrow complex tachycardia. Blood pressure of 120/70. Drug of choice

a. IV adenosine
b. Amiodarone
c. Digoxin
d. CCB

Ans: **A**

226. Patient with recurrent light-headedness, Xray and ECG normal on presentation, Holter monitoring was advised what will u see.?

a. SVT
b. Wenckebach
c. Arial fibrillation

Ans: **B**

227. Patient having narrow complex tachycardia, his blood pressure dropped suddenly and Bp 80/40, appropriate step of management should be?

a. Electrical cardioversion
b. Pharmacological cardioversion
c. Amiodarone
d. IV fluids

Ans: **A**

228. Patient with palpitations, ECG shows Narrow complex Tachycardia, Regular Rhythm, on examination BP 110/70, pulse 145, first step in the management?

a. Carotid massage
b. IV Adenosine
c. Electrical cardioversion
d. IV atropine

Ans: **A**

229. 50 years old male presented with palpitation vitally stable and narrow complex tachycardia Which one of the following is the drug of choice in this patient?

a. Verapamil
b. Adenosine
c. Amiodarone
d. Beta blockers

Ans: **B**

230. A hypertensive patient presents to you with paroxysmal palpitation SOB and wheeze. Drug should be given

a. Atenolol
b. Verapamil
c. Sotalol

Ans: **B**

231. An old man complains of the sudden onset of syncope which tend to occur when he turns his head or while he is shaving: Physical examination is unremarkable. Which of the following is the best way to make a definitive diagnosis in this patient?

a. ECG
b. Carotid massage with ECG monitoring
c. Holter monitor
d. EP study

Ans: **B**

Radiant Notes

Supraventricular Tachycardia (SVT)

- Any tachycardia that is not ventricular in origin the term is generally used in the context of paroxysmal SVT.
- Episodes are characterised by the sudden onset of a narrow complex tachycardia.

The ECG shows:

- Narrow complex tachycardia at 200/min
- No P waves visible
- Normal axis
- QRS complexes normal

Causes:

- Physiological: Anxiety, tea, Alcohol.
- Thyrotoxicosis
- Ischemic heart disease
- Digitalis toxicity

Treatment

- **Hemodynamically unstable---DC Cardioversion**
- **Hemodynamically Stable—**
  - Rest and assurance
  - **Carotid sinus massage or Valsalva maneuver** –it acts by increasing the vagal tone
  - **If no response---**
    - Adenosine ----6mg IV bolus into a large vein, followed by 0.9% saline flush, while recording a rhythm strip. If unsuccessful, after 2 min give 12mg, then one further 12mg bolus.
    - Warn about SE: transient chest tightness, dyspnoea, headache, flushing.
    - Relative CI: Asthma, 2nd/3rd-degree AV block or sinoatrial disease (unless pacemaker).
    - If adenosine fails, use verapamil ~5mg IV over 2–3min. If no response, a further 5mg IV over 3min (if age <60yrs). Alternatives: atenolol 2.5mg IV repeated at 5min intervals until 10mg given; or amiodarone.
    - If unsuccessful, use DC cardioversion.

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Cardiology

232. A patient with broad complex tachycardia with BP 80/55, your next step?
   a. IV fluid resuscitation
   b. CPR
   c. DC cardioversion
   d. Pharmacological cardioversion

Ans: C

233. An ECG taken following admission of a patient shows a broad complex tachycardia consistent with Torsade's de pointes rate 120/min, BP 122/80mmHg & there are no signs of heart failure. What is the most important management?
   a. IV naloxone
   b. IV magnesium sulphate
   c. DC cardioversion
   d. IV amiodarone

Ans: B

234. Old man developed polymorphic ventricular tachycardia after myocardial infarction, likely precipitating factor is?
   a. Hypoglycaemia
   b. Bisoprolol
   c. Hypomagnesaemia
   d. Dehydration
   e. Hyperkalaemia

Ans: C

235. All of the following are causes of broad complex tachycardia except
   a. Hypokalemia
   b. LBBB
   c. Ventricular tachycardia
   d. Hyperglycemia

Ans: D

236. A young man presents with recurrent syncope. He had broad complex tachycardia on ECG. Which drug is best for him?
   a. IV amiodarone
   b. IV adenosine
   c. Beta blockers
   d. Calcium channel blockers
   e. Digoxin

Ans: A

237. Which of the following should be avoided in broad complex tachycardia?
   a. Amiodarone
   b. Verapamil
   c. Sotalol
   d. Atenolol
   e. Cardioversion

Ans: B

Radiant Notes

Ventricular Tachycardia—Wide complex tachycardia

- Ventricular tachycardia is defined as three or more consecutive ventricular premature beats at a rate of >100 bpm (usual rate of 160-240 beats/min)
- **Causes:**
  - Acute myocardial infarction/ Ischemic heart disease (Most common cause)
  - Dilated cardiomyopathies
  - Digitalis toxicity, which can lead to biventricular tachycardia
  - Systemic diseases causing infiltrative cardiomyopathy or scar (e.g., sarcoidosis, amyloidosis, systemic lupus erythematosus, hemochromatosis, rheumatoid arthritis)
  - Torsade's de pointes (a form of VT)
    - Severe hypokalaemia
    - Severe hypomagnesaemia
    - Brugada syndrome:
      - It is a genetic disorder due to defect in sodium channel
    - Drugs (mnemonic: **ABCDE**)
      - Anti**A**rrhythmics (class IA, III)
      - Anti**B**iotics (e.g., macrolides)
      - Anti"**C**"ychotics (e.g., haloperidol)
      - Anti**D**epressants (e.g., TCAs)
      - Anti**E**metics (e.g., ondansetron)

Monomorphic VT	Polymorphic VT (Torsade's de Pointes)
Tachycardia composed of ventricular complexes of a single QRS morphology	Tachycardia composed of ventricular complexes of a changing QRS morphology

If hemodynamically unstable (hypotension, heart failure, or after myocardial ischemia)
- DC cardioversion with 100-360 J should be performed immediately

If hemodynamically stable
- Amiodarone (or lidocaine) is preferred
- Magnesium replacement (1 -2 g intravenously) may help especially for polymorphic ventricular tachycardia

ↈ **V**erapamil is contraindicated in **V**entricular tachycardia

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238. Which of the following should be done to avoid neurological damage during CPR?

a. Mouth to mouth breathing
b. Lye the patient on a hard board
c. Continuous chest compression
d. Endotracheal intubation

Ans: **C**

239. During a CPR, in order to maintain CNS flow, what should be done?

a. Lie patient on hard board
b. Continued chest compression
c. Intubation
d. Start I/V fluid

Ans: **B**

240. A patient having ventricular tachycardia, he has been given DC shock twice, he is still in ventricular tachycardia, your next best step is

a. Continue CPR
b. Amiodarone
c. Adenosine
d. 1 DC shock more

Ans: **D**

241. A patient with pulseless ventricular tachycardia. What he should receive?

a. Shock only once
b. Shock twice
c. Shock 3 times
d. Amiodarone
e. Lidocaine

Ans: **A**

242. A patient brough to resuscitation room and is found to have pulseless VT after initial Resuscitation, what next best treatment is given?

a. 1 shock followed by CPR
b. 3 shock if required
c. Amiodarone
d. Adenosine

Ans: **A**

243. In CPR, dose of adrenaline is

a. 0.1 mg
b. 0.5 mg
c. 1 mg
d. 2 mg
e. 5 mg

Ans: **C**

244. House officers doing CPR of a collapsed patient. your next step?

a. I/V adrenaline every 1 minutes
b. I/V adrenaline every 2 minutes
c. I/V adrenaline every 3 minutes
d. I/V adrenaline every 5 minutes

Ans: **C**

245. A patient had asystole 4 minutes before your arrival. CPR was started before your arrival. what will you do on arrival?

a. IV adrenaline 0.5mg
b. IV adrenaline 1 mg
c. IV adrenaline 2mg
d. IV adrenaline 5mg

Ans: **B**

246. During CPR, definite indication of DC Shock is:

a. Supraventricular tachycardia
b. Ventricular tachycardia
c. Ventricular fibrillation

Ans: **C**

247. A 40 years old male with history of chest pain presents to you in emergency department ECG was normal pattern with sinus dysrhythmias. Management will be

a. Observe / Monitor
b. Amiodarone
c. Lignocaine
d. Aspirin
e. Pacemaker

Ans: **A**

248. Most commonly used anti-arrhythmic in CPR is

a. Verapamil
b. Digoxin
c. Amiodarone

Ans: **C**

Radiant Notes

Cardiopulmonary resuscitation

- Ratio of chest compressions to ventilation is 30:2
- Give adrenaline 1mg every 3-5 mins
- Give amiodarone if needed after 3rd shock
- Atropine is no longer recommended

Ventricular fibrillation/ventricular tachycardia

- Continue chest compression while defibrillator is being charged
- 3 consecutive shocks if needed
- Adrenaline 1mg given once chest compression has restarted—then after every3-5 minutes
- Amiodarone 300mg is also given after the third shock and 1mg adrenaline

VF/pulseless VT

- A single shock followed by 2 minutes of CPR, rather than a series of 3 shocks

Asystole

- No shock, only CPR—check for rhythm in between if shockable—

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249. During cardiopulmonary resuscitation the posterior surface of the heart compressed by?
- a. Body of sternum
- b. Heads of ribs
- c. Tracheal bifurcation
- d. Inferior vena cava
- e. Bodies of vertebrae

Ans: E

250. Which one of the following is a contraindication to DC shock?
- a. Atrial fibrillation
- b. Ventricular tachycardia
- c. SVT with hemodynamic Instability
- d. Digoxin Toxicity

Ans: D

251. DC shock recommended in Ventricular fibrillation is
- a. 50-100J
- b. 150-200J
- c. 200-300J

Ans: C

252. After acute Myocardial infarction, there are runs of few premature ventricular contractions, what would you do:
- a. Just observe
- b. Amiodarone
- c. Lidocaine

Ans: A

253. Post Myocardial infarction patient with continuous runs of sustained premature ventricular contractions?
- a. Amiodaron
- b. Lidocaine
- c. Flecainide
- d. B blocker

Ans: B

✓ Lidocaine is the drug of choice for premature ventricular contractions (PVC) associated with myocardial infarction Ref: Clinical Pharmacology and Therapeutics page 698

254. Best treatment for ventricular fibrillation
- a. Defibrillation
- b. Atropine
- c. Adrenaline
- d. Lidocaine
- e. Leave alone

Ans: A

255. A 50 old male patient had angiography, now he is having haemorrhagic lesions on his body, which investigation should be done?
- a. D dimer
- b. BT
- c. RFT
- d. APTT

Ans: C

256. A 50 years old man developed purpuric rash 24 hours after undergoing a coronary angiography. Next best investigation.
- a. RFTs
- b. CBC
- c. Clotting profile

Ans: A (Cholesterol embolization syndrome)

257. Myocardial Infarction patient underwent angioplasty and three days later developed oliguria and raised creatinine, likely cause is
- a. Pre renal failure
- b. Contrast induced nephropathy
- c. Aspirin induced nephropathy

Ans: B

258. According to AHA, what is the updated method of CPR?
- a. 30:2
- b. 15:2
- c. 30:1
- d. 30:3

Ans: A

259. The foremost step to unconscious patient?
- a. Start CPR
- b. Call for help
- c. Secure airway
- d. Place in left lateral position

Ans: B

260. Which of the following is a shockable rhythm?
- a. Pulseless activity
- b. Ventricular fibrillation
- c. Sick sinus syndrome
- d. AV block

Ans: B

261. What is the treatment of pulseless VT?
- a. Defibrillation
- b. CPR
- c. Atropine
- d. Epinephrine

Ans: A

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262. **Which of the following ECG changes is seen in hypercalcemia?**
a. Short QT interval
b. Absent P wave
c. Tall tented T waves
d. Short PR interval
e. Long QT interval
Ans: A

263. **Patient ECG shows accidental finding of Short QT interval likely cause is**
a. K=2.5
b. Ca=12.4
c. Na=134
Ans: B

264. **An ECG of patient shows absent P wave and wide QRS complex, he is suffering from:**
a. Hypocalcaemia
b. Hypercalcemia
c. Hypomagnesemia
d. Hypokalemia
Ans: D

265. **Old male ECG shows tall tented T waves, what should be given?**
a. IV calcium gluconate
b. IV potassium
c. IV MgSO4
Ans: A

266. **A 45-year-old man with essential hypertension presents to the emergency department with muscle weakness and palpitations. Peaked T waves and prolonged PR intervals are noted on ECG. Which of the following medications could be the underlying cause of the changes noted on this patient's ECG?**
a. Acetazolamide
b. Furosemide
c. Hydrochlorothiazide
d. Mannitol
e. Spironolactone
Ans: E

267. **An ICU admitted patient developed tall tented T-waves and broad QRS complexes on ECG. What should be done immediately?**
a. Serum electrolytes
b. ABGs
c. CBC
d. Chest x-ray
e. Echocardiography
Ans: A

268. **IV bolus of KCL causes cardiac arrest in which pause of heart?**
a. Cardiac arrest in diastole
b. Cardiac arrest in systole
c. Arrythmias
Ans: A

269. **A female patient complaining of hyperreflexia and carpopedal spasm, what ECG abnormality is associated with this finding?**
a. Atrioventricular node block
b. Tall Tented T waves
c. Long QT
d. Short QT
Ans: C

Cardiology

Radiant Notes

Electrolyte disturbances IN ECG

- Hyperkalaemia
  - Mild to moderate (K+ 5-7 mmol/L): tall peaked T waves
  - Severe (K+ >7 mmol/L):
    - ✓ P waves flatten and disappear
    - ✓ QRS widens and bizarre
    - ✓ ST shift with tall T waves, eventually becomes a "**sine wave**" pattern
- Hypokalemia
  - U waves
  - Small or absent T waves (occasionally inversion)
  - Prolong PR interval
  - ST depression
  - Long QT
  - Enhances the toxic effects of digitalis
- Hypercalcemia
  - Shortened QT interval (more extracellular Ca2+ means shorter plateau in cardiac action potential)
- Hypocalcaemia
  - Prolonged QT interval (less extracellular Ca2+ means longer plateau in cardiac action potential)

QT interval

Prolonged QT interval	Decreased QT interval
❖ Risk of Torsade's de Pointes	❖ Risk of V-Fib
Causes: o Genetic Long QT Syndrome (Romano–Ward) o Drugs: antibiotics, SSRIs, antipsychotics, antiarrhythmics o Electrolytes: low Ca2+, low Mg2+, low K+	Causes: o Electrolytes: high Ca++ o Drugs: digoxin o Others: hyperthyroidism

Digoxin:
- Digoxin causes = Hyperkalaemia
- Digoxin toxicity increases with= Hypokalemia, hypomagnesemia & hypercalcemia

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Cardiology

270. **Digoxin toxicity increases with:**
a. Ca gluconate
b. KCL infusion
c. Verapamil
d. Spironolactone

Ans: **A**

271. **ECG changes in severe hypokalaemia**
a. P wave inversion
b. T wave inversion
c. Wide QRS
d. Absent u waves

Ans: **C**

272. **A patient has SOB on exertion which settles with rest of 20 minutes. What is true?**
a. Low cardiovascular reserve
b. Right to left shunt
c. Dextrocardia

Ans: **A**

273. **A 69-year-old male presents with dyspnea on exertion in emergency and productive cough with pink frothy sputum. On CXR, there is intra-alveolar shadowing and upper lobe diversion. What is the diagnosis?**
a. Acute pulmonary edema
b. Acute severe asthma
c. Mitral stenosis
d. Acute bronchitis
e. Massive pleural effusion

Ans: **A**

274. **Patient complains of dyspnea, Echo was done which shows EF 47%, diagnosis?**
a. Systolic dysfunction
b. Diastolic dysfunction
c. Concomitant systolic and diastolic dysfunction

Ans: **B**

275. **Heart failure seen in patients with hypertension?**
a. Systolic heart failure
b. Diastolic heart failure
c. Both systolic and diastolic
d. Dilated cardiomyopathy

Ans: **B**

276. **Heart failure seen in HOCM disease patient is?**
a. Systolic heart failure
b. Diastolic heart failure

Ans: **B**

277. **A patient presented with shortness of breath and high output cardiac failure. it is due to what?**
a. Beri-Beri
b. COPD
c. HoCM
d. TOF

Ans: **A**

Radiant Notes

Systolic Heart Failure Vs. Diastolic Heart Failure

Systolic Failure	Diastolic Failure
❖ Inability of the ventricle to contract normally, resulting in ↓cardiac output. Ejection fraction **(EF) is <40%.** ❖ Causes: IHD, MI, cardiomyopathy.	❖ Inability of the ventricle to relax and fill normally, causing ↑filling pressures. **EF is >50%.** ❖ Causes: Hypertension, constrictive pericarditis, tamponade, restrictive cardiomyopathy,

Low- Vs. High Output Heart Failure

Low-output heart failure	High-output heart failure
❖ Cardiac output is ↓e.g. due to systolic or diastolic heart failure, heart block, MR, AS, fluid overload	❖ This is rare. Here, output is normal or increased in the face of ↑needs. ❖ Causes: Anaemia, pregnancy, hyperthyroidism, Paget's disease, beriberi.

Left Heart Failure	Right Heart Failure
Clinical manifestations: ❖ Dyspnea and orthopnoea caused by pulmonary congestion and edema regularly occurs ❖ Pulmonary edema: Presence of hemosiderin-laden macrophages (HF-cells) in lungs ❖ Distention of neck veins	Clinical manifestations: ❖ Renal hypoxia, leading to greater fluid retention and peripheral edema than left-sided failure. ❖ Enlarged and congested liver and spleen. ❖ Chronic passive congestion of the centrilobular veins of the liver leads to a "nutmeg" pattern. ❖ Distention of the neck veins

BNP

✓ B-type natriuretic peptide is a hormone Produced mainly by the left ventricular myocardium in response to strain.
✓ Very high levels are associated with a poor prognosis.

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278. A 56 years old male presents to you in OPD with dyspnea complaint. Investigations showing clear chest x-ray while Echocardiography shows LV hypertrophy. What could be the cause?
- a. Asthma
- b. COPD
- c. Diastolic heart failure
- d. Systolic heart failure

Ans: **C**

279. Poor prognostic marker for heart failure?
- a. ANP
- b. BNP
- c. ADH
- d. EF < 0.25

Ans: **B**

✓ For those who are with low ejection fraction--- it would shows prognosis only for systolic heart failure while BNP for both systolic and diastolic heart failure

✓ Another marker for poor prognosis includes hyponatremia

280. A Patient bilateral basal crept, palpitation S3 gallop, pedal edema, Treatment will be:
- a. Diuretics + ACE + Beta blocker
- b. Diuretics +ACE
- c. Diuretics alone

Ans: **A**

281. A patient presented with SOB, cold sweaty extremities chest examination shows inspiratory and expiratory wheeze, there is pink frothy sputum what is likely Dx?
- a. Pulmonary edema
- b. Myocardial infarction
- c. Emphysema

Ans: **A**

282. A patient has history of exertional dyspnea. Her Echo and angiography came to be normal. What will be the investigation of choice?
- a. Chest X-ray
- b. Stress thallium
- c. Repeat angiography

Ans: **A**

283. 50-year-old male presents with mild shortness of breath and pedal edema. EF is 30%. What is the best long-term treatment option?
- a. Furosemide, Captopril, Digoxin
- b. Ramipril, Carvedilol, Spironolactone
- c. Carvedilol, Spironolactone, Digoxin
- d. Furosemide, Carvedilol, Spironolactone

Ans: **B**

284. A patient presented with worsening dyspnea having with ischemic EF 35% hypokinesia on echo, already taking ACEI, statin and aspirin now what to give
- a. Bisoprolol
- b. Carvedilol
- c. Diuretic
- d. Hydralazine + nitrate

Ans: **C**

285. Which one of the following is measured indirectly by Swan Ganz catheter?
- a. Right atrial pressure
- b. Right ventricular pressure
- c. Pulmonary arterial pressure
- d. Left atrial pressure

Ans: **D**

286. Swan Ganz catheter cannot measure directly?
- a. Cardiac output
- b. Venous O2 saturation
- c. Pulmonary artery pressure
- d. Pulmonary artery resistance
- e. Left ventricle end-diastolic pressure

Ans: **A**

287. Pulmonary capillary wedge pressure is approximation of pressure in
- a. Right atrium
- b. Left atrium
- c. Right ventricle
- d. Left ventricle

Ans: **B**

288. 60-year male with normal past history now develops symptoms of LV failure and pulmonary edema without any previous illness and BP 125/85mmhg. On x ray Cardiomegaly. Cause of heart failure is
- a. Bicuspid aortic valve
- b. Alcoholic cardiomyopathy
- c. Amyloidosis
- d. Pulmonary edema

Ans: **A**

Swan-Ganz catheter or pulmonary artery catheter

❖ Measures directly
- ✓Right atrial pressure
- ✓Right ventricular pressure,
- ✓Pulmonary artery wedge pressure (PAWP)
- ✓Systemic vascular resistance (SVR)
- ✓Cardiac output (CO)

❖ Measures Indirectly
- ✓Left atrial pressure
- ✓ Left ventricle's end-diastolic pressure (LVEDP) and is an invaluable assessment.

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289. A young boy with long QT syndrome, with no history of syncope, treatment includes?

a. Escitalopram
b. ICD
c. Beta blockers

Ans: **C**

290. Which one of the following is an indication for pacemaker?

a. Mobitz type 2 (2:1 AV block)
b. Mobitz type 1 block
c. Sinus bradycardia

Ans: **A**

291. Most common indication of pacemaker in anterior wall myocardial infarction?

a. New LBBB with 1st degree block
b. New RBBB with 1st degree block
c. Bifascicular block
d. Pre-existing LBBB
e. Pre-existing bifascicular block with 1st degree block

Ans: **E**

292. Which one of the following is an indication for pacemaker in inferior wall MI?

a. Mobitz type 1 block
b. Sinus bradycardia
c. Trifascicular block
d. Bifascicular block

Ans: **A**

293. Female diagnosed with Inferior wall myocardial infarction, what precludes need of pacemaker?

a. Asymptomatic 3rd degree AV block
b. Trifascicular block
c. High degree AV block
d. AV block with normal ventricular conduction and intermittent block

Ans: **D**

Radiant Notes

- **Bifascicular block** on ECG is defined by the combination of a right bundle branch block and either a left anterior fascicular block or left posterior fascicular block.
- **Trifascicular block** is the combination of bifascicular block and 1st degree heart block.
- **Definite indications for pacemaker**
  - ✓ Symptomatic third-degree heart block
  - ✓ Bradycardia with symptomatic Pauses >3 seconds
  - ✓ Third-degree or advanced second-degree heart block in patients
  - ✓ Bifasicular block with intermittent third-degree, second-degree block or alternating bundle branch block
  - ✓ Trifascicular block with intermittent third-degree or second-degree block
- **Relative indications for pacemaker**
  - ✓ Asymptomatic third-degree block with V rate <40 or second degree (type II) with distal heart block
  - ✓ Sinus node dysfunction (SND) with HR <40

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294. A patient presented to you with complain of light headedness. On rhythm strip, there was a sinus pause of 2.5cm. Next best management plan at this point is:

a. 24-hours Holter monitoring
b. Echocardiography
c. Angiography
d. Trial of pacemaker
e. Permanent pacemaker

Ans: A

---

295. Patient with light headedness, on Holter monitoring pause of more than 2.5 sec, treatment?

a. Temporary Pacemaker
b. Permanent pacemaker
c. IV atropine
d. Reassurance
e. Amiodarone

Ans: B

---

296. An old lady with past history of multiple episodes of black outs lasting for just half a minute. All systemic examination is normal. Investigation to be done

a. CT brain
b. MRI brain
c. Holter monitoring

Ans: A

---

297. A patient had Myocardial infarction one month back. Now he had multiple off and on episodes of palpitations and dizziness. ECG on presentation is normal. Best investigation will be

a. Exercise tolerance test
b. Echocardiography
c. Holter monitoring
d. Angiography
e. Plethysmography

Ans: C

---

298. A young boy with complain of recurrent episodes of transient loss of consciousness lasting for half a minute. The most appropriate investigation to reach the diagnosis will be

a. Holter monitoring.
b. ECG
c. ECHO
d. Angiography
e. Carotid ultrasound

Ans: A

---

299. Old age male having complaints of syncope many times and recovers soon after without any neurological deficit

a. CT scan
b. Holter monitor
c. MRI brain

Ans: B

---

300. Female with history of ischemic heart disease presented with dyspnea and altered level of consciousness. On ECG there is complete AV dissociation. On examination her rate is 48/min and blood pressure 110/80. Management?

a. Pacemaker
b. Holter monitoring
c. CT brain
d. Electrophysiology
e. Echocardiography

Ans: A

---

301. Which drug toxicity causes AV dissociation?

a. Propranolol
b. Digoxin
c. Diltiazem
d. Hydralazine

Ans: B

---

302. Drug than most often causes AV dissociation.

a. Quinidine
b. Hydralazine
c. Procainamide
d. Quinine
e. Digoxin

Ans: E

---

303. Which one of the following ECG findings is least associated with digoxin use?

a. Bradycardia
b. Down-sloping ST depression
c. Flattened T waves
d. Prolonged QT interval
e. AV block

Ans: D

---

304. A patient is suspected to have Pulmonary hypertension, which one of the following is the single most important test to confirm the diagnosis?

a. Echo
b. High resolution CT thorax
c. Cardiac catheterization
d. Pulmonary angiography
e. Ventilation perfusion scanning

Ans: C

---

305. A patient comes to you with complain of difficulty in swallowing. He tells you that some doctor has advised him CXR. His CXR shows raised left main bronchus. Diagnosis which comes into your mind

a. Left atrial enlargement
b. Left ventricle enlargement
c. Left atria and ventricle enlargement

Ans: A (left atrial enlargement radiographic findings include superior displacement of left main bronchus on frontal view)

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306. 62-year-old man is reviewed in Clinic after Increase in creatinine from 0.9 mg/dl to 1.7 mg/dl after starting ramipril. USG Abdomen done which asymmetric kidneys. Next investigation?

a. Renal Angiography
b. 24 hours urinary proteins
c. Renal artery Doppler flow studies
d. CT angiography
e. MR angiography

Ans: **C**

---

307. Young female, renal artery stenosis is thought to be cause of HTN. What finding is expected on CT Angiography?

a. Fibromuscular dysplasia
b. Atherosclerosis
c. Medial calcification

Ans: **A**

---

308. 39-year-old female who is being treated for hypertension and has recently commenced ramipril is presented with shortness of breath. On auscultation of chest there are bibasal crackles. What is the most likely underlying cause?

a. Renal artery stenosis
b. Ischemic heart disease
c. Atrial fibrillation
d. Silent MI
e. Hypertension

Ans: **A**

---

309. 55-year-old man, past history Myocardial infarction, smoker presents with Breathlessness ECG & cardiac enzymes are normal X-ray shows upper lobe diversion and perihilar shadowing on exam bilateral crepitations. What is your diagnosis?

a. Infective endocarditis
b. Ant wall MI
c. Renal artery stenosis
d. Fibromuscular Dysplasia

Ans: **C**

---

310. A young male presented with hypertension, worse on taking Capoten and right kidney is larger than left, what is the diagnosis?

a. Renal artery stenosis
b. ADPKD
c. Hypernephroma

Ans: **A**

---

311. Following conditions may be seen in Renal artery stenosis except:

a. Atherosclerosis
b. Fibromuscular dysplasia
c. Takayasu's arteritis
d. Polyarteritis nodosa

Ans: **D**

---

312. A young male taking beta blockers for HTN, after starting him on Captopril his condition became worse. You advised Ultrasound abdomen and found that right kidney is larger than the left kidney. what is your diagnosis?

a. Polycystic kidneys.
b. Renal artery stenosis
c. Hypernephroma

Ans: **B**

Radiant Notes

Renal vascular disease (Renal artery stenosis)

- It may present as HTN, CKD or 'flash' pulmonary oedema.
- Fibromuscular dysplasia is more common in young women and characteristically has a 'string of beads 'appearance on angiography.

Investigation

- Duplex ultrasonography (DUS) is the first-line test
- Computed tomography angiography in patients with creatinine clearance >60 mL/min
- Magnetic resonance angiography in patients with creatinine clearance >30 mL/min
- Renal angiography (Gold standard –SCAI American recommendation

Note: **Acc to MRCP pass medicine MR angiography is the investigation of choice—while according to AHA and SCAI renal angiography**

- Renal artery stenosis (RAS) is often unmasked when patients commence an ACE inhibitor, causes increases in creatinine levels

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313. A 20 years old Asian female presents with loss of consciousness that occurred without prodrome or postictal state. Over the last several months, she has developed sever fatigue and malaise with weight loss and joint pain. On examination her BP =80/50. And pulse =120/mm RR=30/min Temp AF. All upper limbs pulses were absent without skin necrosis or neurologic compromise. ESR is raised and there is Normocytic anemia. What is your most likely diagnosis?

a. Takayasu arteritis
b. Raynaud's disease
c. Fibromuscular dysplasia
d. Buerger disease
e. Atherosclerosis

Ans: **A**

314. 30-year-old male smoker presents with pain in big toe for 2 days. On examination dorsalis pedis is not palpable. His blood glucose is 90mg/Dl. Diagnosis is

a. Atherosclerosis
b. Diabetic vascular disease
c. Bergers disease
d. Giant cell arteritis
e. Arteriosclerosis

Ans: **A** (Note there is a difference between Berger (IgA nephropathy) and Buerger disease (thromboangiitis obliterans)—this question is collected from 2010 papers and it was compiled as exact copy of CPSP paper—so I don't have any doubt that it's a spelling mistake)

315. Adults patient presents with weakness of right side of body. On examination pulses of upper limbs are not palpable. Most likely diagnosis is?

a. Takayasu arteritis
b. Polyarteritis nodosa
c. Behcet disease
d. Giant cell arteritis
e. Kawasaki

Ans: **A**

316. Male presents with pain in temporal lobe area along with labs show ESR 88mm/hr and TLC 10000/mm3. Immediate treatment is:

a. High dose aspirin
b. Immunoglobins
c. Oral prednisolone 60mg
d. Low dose aspirin
e. Azathioprine

Ans: **C**

317. Finding in Takayasu

a. Absent radial pulse
b. Low pressure in Lower limb, high in Upper Limb
c. High in Lower Limb lower in Upper Limb

Ans: **A**

Radiant Notes

Large vessel vasculitis

Giant Cell (Temporal) Arteritis
- Common sites: temporal, ophthalmic artery
- Clinical findings: throbbing headache (Unilateral), jaw claudication. May lead to irreversible blindness due to ophthalmic artery occlusion.
- Associated with polymyalgia rheumatica.
- Diagnosis: temporal artery biopsy

Takayasu Arteritis
- Pulse less disease (weak upper extremity pulses)
- Granulomatous thickening and narrowing of aortic arch and proximal great vessels

Medium sized vasculitis

Polyarteritis Nodosa
- Typically involves renal and visceral vessels, sparing pulmonary arteries
- Hepatitis B seropositivity in 30% of patients.

Kawasaki Disease
- Self-limiting disease
- Also called Mucocutaneous lymph node syndrome: fever; hemorrhagic edema of conjunctivae, lips, and oral mucosa; and cervical lymphadenopathy
- May develop coronary artery aneurysms, thrombosis or rupture can cause death
- Treatment:
  - IV Immunoglobulin + high dose aspirin

Buerger Disease (Thromboangiitis Obliterans)
- Heavy smokers, males < 40 years old.
- Intermittent claudication may lead to gangrene.
- Autoamputation of digits
- Raynaud phenomenon is often present

Small Sized Vasculitis

Note

C-ANCA positive-- Wegner Granulomatosis
P-ANCA positive--Churg Strauss Syndrome and Microscopic Polyangiitis
ANCA Negative--Henoch Scholenin Purpura

Wegener Granulomatosis (aka Granulomatous with polyangiitis)

Involving upper respiratory tract, lung and renal vessels
- Sinusitis, otitis media
- Hemorrhagic pneumonitis (pneumonia plus hemoptysis)
- Nephritic syndrome

Henoch-Schönlein Purpura
- Most common childhood systemic vasculitis.
- Often follows URI.
- Classic Triad:
  - Skin: palpable purpura on buttocks/legs
  - Arthralgias
  - GI: abdominal pain

Associated with IgA nephropathy (Berger disease)

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318. A 5-year-old child presented with high grade fever, with 5 days. On examination he has conjunctival congestion, rash on chest and edema of hands and feet. Most appropriate treatment will be:
a. Immunoglobulin +aspirin
b. Aspirin
c. IV antibiotics
d. Aspirin +cyclosporine
e. Immunoglobulins

Ans: **A** (Kawasaki disease)

319. Which one of the following is an example of a large vessel vasculitis?
a. Polyarteritis nodosa
b. Churg-Strauss syndrome
c. Takayasu's arteritis
d. Henoch-Schoenlein purpura
e. Kawasaki disease

Ans: **C**

320. A 40 years old female presented with fever, otitis media, hemoptysis and blood in urine, a diagnosis of Granulomatous with polyangiitis made, which one of the following is the best initial test?
a. P- ANCA
b. C- ANCA
c. Biopsy

Ans: **A**

For Wegner's granulomatosis (Ref: MTB page 263)
- ✓ If asked initial test—C- ANCA
- ✓ If asked most accurate/Best test—Biopsy
- ✓ Lung biopsy is better than renal biopsy with sinus biopsy being the least accurate. When all 3 are in the choices, choose lung biopsy

321. Renal biopsy shows Wegener's granulomatosis. Appropriate treatment?
a. Blood transfusion
b. Cyclophosphamide and prednisolone
c. Methotrexate
d. Cyclosporin

Ans: **B**

322. A young boy presents to you with SOB. Hemoptysis and skin lesions. you suspect Churg-Strauss. what type of antibodies is present?
a. C-ANCA
b. P-ANCA

Ans: **B**

Remember: Mnemonic for Churg-Strauss (**PAVE**)
- ✓ P-ANCA positive, Asthma + Vasculitis + Eosinophilia

323. A young male presents to you with pain in joints and abdomen, you examined the patient and found rash on the buttocks and extensor surface of the body. what will be your diagnosis?
a. Thrombotic thrombocytopenic purpura
b. Hemolytic uremic syndrome
c. Henoch-Scholenin purpura

Ans: **C**

324. A 12-year-old boy presented with bleeding PR, pain in abdomen and bruised buttocks. he has also urinary complains, the most appropriate diagnosis is:
a. Idiopathic thrombocytopenic purpura
b. Henoch-Scholenin purpura
c. Scurvy
d. Crescentic glomerulonephritis

Ans: **B**

325. Which of the following is true for HSP?
a. Typically occurs in adolescents
b. in 40% cases, has renal manifestation (GN)
c. Not associate with palpable purpura

Ans: **B**

326. Massive pericardial effusion occurs in
a. TB
b. Viral infection
c. Malignancy
d. Trauma
e. Drugs

Ans: **C**

327. Which is risk factor of perioperative ischemia?
a. Isoflurane
b. hypertension
c. Tachycardia
d. Opioids

Ans: **C** (Ref: page 379 Yao & Artusio's Anesthesiology: Problem-oriented Patient Management edited by Fun-Sun F. Ya)

328. Risk of Myocardial infarction during Coronary angiography?
a. 1 in 100
b. 1 in 1000
c. 1 in 2000
d. 1 in 10000

Ans: **B**

329. Patient on warfarin for Atrial Fibrillation, INR is 2, endoscopy to be done for celiac disease suspicion, what to do
a. Stop warfarin
b. Replace with aspirin
c. Low molecular weight heparin
d. Continue with warfarin

Ans: **D**

330. Which of the following antihypertensive drug is contraindicated in Pregnancy?
a. Atenolol
b. Methyldopa
c. Captopril

Ans: **C**

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Chapter: 3 Gastrointestinal

1. Investigation of choice for GERD is:
- a. 24 hr intraluminal pH monitoring
- b. Manometry
- c. Barium swallow
- d. Urea breath test
- e. Serology

Ans: **A**

2. An alcoholic patient with history of GERD was taking antacids. Now he presented with worsening of symptoms and weight loss. Investigation to proceed is:
- a. Barium meal
- b. Upper GI endoscopy
- c. CT abdomen

Ans: **B**

3. An 80-year-old alcoholic male presents to you with history of GERD for many weeks. He took antacids, PPI, for this but symptom warned. He also complains of significant weight loss during these weeks. What should be your immediate management plan?
- a. Upper GI endoscopy
- b. US abdomen
- c. Serology
- d. Urea breath test

Ans: **A**

4. An old diabetic male was being investigated for dysphagia. he had a very strong history of GERD. An endoscopy reveals an obstructive lesion which is highly suspicious of esophageal cancer. Biopsy of the lesion will show?
- a. Adenocarcinoma
- b. Squamous cell carcinoma
- c. Normal columnar epithelium
- d. Metaplastic columnar epithelium

Ans: **A**

5. A male patient presents to you in OPD with complain of cough on lying on bed and retrosternal burning on and off. Your diagnosis will be?
- a. GERD
- b. Chest infection
- c. Anxiety

Ans: **A**

6. Patient during drinking hot coffee develop retrosternal pain radiating to back aggravated by bending forward, ECG is normal, Echo is normal?
- a. Oesophagitis
- b. Pericarditis
- c. Achalasia
- d. Cholelithiasis
- e. GERD

Ans: **A**

7. A 45 years old male referred to Gastroenterology unit by a GP with iron deficiency anemia. What investigation should be done to evaluate
- a. Upper GI endoscopy
- b. Lower GI endoscopy
- c. H. Pylori eradication therapy

Ans: **A**

Radiant Notes

Gastroesophageal Reflux Disease

- It refers to a condition in which the stomach contents (most characteristically acid) moves backwards from the stomach into the esophagus
- Etiology:
  - Inappropriate transient relaxations of LES – most common cause
  - Low basal LES tone (especially in scleroderma)
- Investigation
  - **24 h pH monitoring**
    - Most accurate test for reflux, but not required or performed in most cases
    - Most useful if PPIs do not improve symptoms
  - Upper GI endoscopy
    - Investigation of choice
    - It is done when failure of therapeutic trial of 4-8 wk. of PPI 2x daily
    - **If there are Alarm features such as= age > 55 years, dysphagia, odynophagia, weight loss, iron deficiency anemia**
  - Esophageal manometry (study of esophageal motility)
- Complications:
  - Esophagitis
  - Benign esophageal stricture-----scarring can lead to dysphagia (solids)
  - Barrett's esophagus
  - Esophageal adenocarcinoma
- Treatment:
  - Avoid cigarettes smoking & Weight loss in overweight patients
  - All patients should be advised to elevate the head end of the bed & avoid lying down within 3 hours after meals (the period of greatest reflux)
  - PPI should be given for 8-12 weeks

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8. A patient took NSAIDs for a long period of time, he is now complaining of pain in epigastrium, which is aggravated by spicy food

a. Gastritis
b. Achalasia
c. Gastric adenocarcinoma

Ans: A

9. Which of the following is the risk factor for H. pylori infection?

a. Female sex
b. PPI therapy
c. Low socioeconomic indicators
d. Excessive exposure to antibiotics

Ans:

10. Which one of the following has strong association with H. pylori infection?

a. Esophageal cancer
b. Gastric adeno CA
c. GERD
d. Duodenal ulceration
e. Achalasia

Ans: D

11. Most sensitive test for detecting of H. Pylori?

a. Gastric biopsy
b. Serology
c. C13 Urea breath test
d. Culture of gastric biopsy

Ans: A

12. Best test for diagnosing H. pylori

a. Serology
b. C13 Urea breath test
c. Manometry
d. Fecal antigen test

Ans: B

13. A patient with upper gastrointestinal symptoms tests positive for helicobacter pylori following a urea breath test. Which one of the following conditions is most strongly associate Helicobacter pylori infection?

a. Gastric adenocarcinoma
b. Gastro-oesophageal reflux disease
c. Oesophageal cancer
d. Duodenal ulceration

Ans: D

14. Patient with history of dyspepsia, endoscopy done that showed 1.5cm ulcer in stomach. What will you do?

a. Start him on Empirical H pylori therapy
b. Multiple Biopsies of ulcer
c. Trial of PPI

Ans: B

Radiant Notes

Peptic Ulcer Disease

Etiology:

- H. Pylori -------duodenal ulcers (more common 90%), Gastric ulcers (60%)
- NSAID's--------Duodenal ulcers (7%), Gastric ulcers (More common 35%)
- Physiological stress (if CNS process = "CuShing's ulcer"; if buRn = "CuRling's ulcer").
- Zollinger Ellison syndrome, Idiopathic, Smoking

Duodenal ulcer vs Gastric Ulcer

- Duodenal ulcer pain Decreases with food.
- Gastric ulcer pain Grows with food
- **Gastric ulcers are mostly malignant & must always be biopsied to rule out malignancies**

❖ **Investigation**

- Upper GI endoscopy +/- biopsy --investigation of choice

❖ **H. pylori tests**

Test	Advantage
Serology (H. pylori antibodies test)	cheapest non-invasive test remains positive after eradication sensitivity 85%, specificity 80%
C13 Urea breath test	sensitivity 95-98%, specificity 97-98% Most widely used after PPI therapy
Fecal antigen test	sensitivity 90%, specificity 95%
Gastric biopsy	Gold standard for diagnosis of peptic ulcers histological evaluation alone, no culture sensitivity & specificity → 95-99%
Culture of gastric biopsy	provide information on antibiotic sensitivity sensitivity 70%, specificity 100%
Rapid urease test	

H. Pylori Eradication therapy (For 14 DAYS)
Standard triple therapy (Eradication upto 90%)

- PPI [(e.g. Cap. Risek 40mg (Omeprazole)---Twice daily
- Tab. clarithromycin 500mg -Twice daily
- Tab. Amoxicillin 1g Twice daily **OR** metronidazole 400 mg orally twice daily, if penicillin allergic)

Quadruple therapy (Eradication more than 90%)

- PPI (Omeprazole 40mg) ---Twice daily
- Bismuth subsalicylate 265mg--- two tablets orally four times daily
- Tetracycline 100 mg orally four times daily
- Metronidazole 400 mg - three times daily

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15. Which one of the following is an eradication therapy for H. Pylori?
- a. Penicillin, clarithromycin, cephalosporin, PPI
- b. Penicillin, azithromycin, cephalosporin, PPI
- c. Penicillin, clarithromycin, PPI
- d. Metronidazole, penicillin, PPI

Ans: **C**

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16. A case of peptic ulcer disease, H. pylori is suspected which of the following is the treatment of choice for H. pylori eradication?
- a. Omeprazole + Ampicillin + Clarithromycin
- b. Omeprazole + metronidazole + bismuth
- c. Omeprazole + metronidazole
- d. Omeprazole + Ampicillin

Ans: **A**

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17. Best treatment options for recurrent duodenal ulcers?
- a. PPI 4 weeks
- b. PPI 4 weeks + clarithromycin + amoxicillin (14 days)
- c. PPI+ amoxicillin + bismuth
- d. Ranitidine + clarithromycin + amoxicillin

Ans: **B**

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18. Regarding H. pylori
- a. Associated with gastric ulcer
- b. F. antigen is accurate for diagnosis
- c. Rare association with gastric carcinoma
- d. Mostly found in greater curvature of stomach
- e. Acquire through blood transfusion

Ans: **A**

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19. Which of the following pathologies is most associated with H pylori infection?
- a. Gastric ulcer
- b. Duodenal ulcer
- c. Gastric carcinoma
- d. Non-ulcer dyspepsia
- e. GERD

Ans: **B**

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20. A 45-year-old lady came to consultation room complaining from mild dyspepsia and pain after meals, she mentioned that before one month she received Omeprazole, Clarithromycin and amoxicillin for 14 days to treat H. pylori associated gastric ulcer. What is the appropriate next step?
- a. Reassurance
- b. Endoscopy with biopsy to rule out gastric cancer
- c. Empirical long-term proton pump inhibitor
- d. Serology test for H. pylori
- e. Stool antigen test for H. pylori

Ans: **B**

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21. The cause of recurrent duodenal ulcers:
- a. Lymphoma
- b. Islet cell tumors
- c. H. pylori infection
- d. Pernicious anemia

Ans: **C**

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22. Which is the most common location of duodenal ulcer?
- a. Anterior wall
- b. Posterior wall
- c. Duodenal cap
- d. Junction of duodenum and jejunum

Ans: **A**

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23. The most common location for duodenal ulcer?
- a. Anterior wall of 1st part of duodenum
- b. Posterior wall of 1st part of duodenum
- c. Duodenal cap
- d. Junction of duodenum with jejunum

Ans: **A**

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24. Most Common complication of Peptic Ulcer Disease
- a. Stricture
- b. Obstruction
- c. Perforation
- d. Hemorrhage

Ans: **D**

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25. A 35 years old male was diagnosed as having duodenal ulcer on endoscopy. Which one of the following is the most common symptom?
- a. Epigastric pain
- b. Nausea
- c. Melena
- d. Anorexia

Ans: **A**

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26. A 40-year-old driver presents with epigastric pain which becomes worsened day by day. Which of the following is most likely diagnosis?
- a. Gastric ulcer
- b. Duodenal ulcer
- c. Hiatus hernia
- d. Achalasia

Ans: **B**

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27. A 50-year-old footballer with a history of alcohol intake presented with epigastric pain, which characteristic pain. Which characteristic suggest duodenal ulcer rather than pancreatitis?
- a. Back pain
- b. Exacerbates with alcohol
- c. Loose stools
- d. Relieved by food

Ans: **D**

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Gastrointestinal

28. A 40 years old female presented to you in OPD with complaint of epigastric pain. She has long history of GERD. Anything she takes, she vomits. What will be your diagnosis?
- a. Pregnancy
- b. Hepatitis
- c. Pyloric channel ulcer

Ans: **C**

29. Pyloric stenosis/ Pyloric channel obstruction vomiting metabolic anomaly
- a. Hypokalemic alkalosis with alkalinuria
- b. Hyperkalemic alkalosis with alkalinuria
- c. Hypochloremic alkalosis with aciduria
- d. Hyperchloremic acidosis

Ans: **C**

30. A patient was found to have recurrent gastric ulcers and increased gastrin levels. What is Diagnosis?
- a. Gastric lymphoma
- b. Gastrinoma
- c. Gastric Cancer
- d. H. pylori

Ans: **B**

31. A patient presented with epigastric discomfort, he was found to have multiple duodenal ulcers, possible diagnosis?
- a. Peptic ulcer
- b. Zollinger Ellison syndrome
- c. gastritis
- d. Somastatinoma

Ans: **B**

32. A male in your OPD presented with complaint of diarrhea, on investigations he found to have multiple gastroduodenal ulcers, what is diagnosis?
- a. Gastric lymphoma
- b. Gastric cancer
- c. H. pylori
- d. Zollinger Ellison syndrome

Ans: **D**

33. A 43-year-old man with a recurrent history of ulcer disease associated with diarrhea and a strong family history of duodenal ulcer disease is suspected of having Zollinger-Ellison syndrome (Gastrinoma). Secretin (1 U/kg) is given as a rapid intravenous injection to test for gastrinoma. Which of the following results would support the existence of gastrinoma following secretin administration?
- a. Gastrin release from antrum
- b. Increased serum gastrin
- c. Inhibition of gastric emptying
- d. Inhibition of gastric secretion
- e. Stimulation of pancreatic HCO_3^- secretion

Ans: **B**

34. For diagnosing Zollinger Ellison syndrome, which test will you perform?
- a. Serum procalcitonin level
- b. Serum C-peptide level
- c. Serum gastrin level
- d. Urinary pH testing

Ans: **C**

35. Screening test for Zollinger Ellison syndrome
- a. Secretin stimulation test
- b. Fasting Gastrin test
- c. Ultrasound abdomen

Ans: **B**

36. The most accurate diagnostic test for Zollinger-Ellison syndrome (ZES) is
- a. Fasting serum gastrin
- b. Computed tomography (C) scan
- c. Endoscopy
- d. Secretin stimulation test

Ans: **D**

37. Inc gastrin Level seen apart from ZES?
- a. Pancreatic Ca
- b. hypochlorhydria
- c. Hypercalcemia
- d. Gastric pH more than 2.5

Ans: **B**

38. Gastrinoma are usually located in:
- a. Porta hepatitis
- b. Neck of pancreas
- c. Third part of duodenum

Ans: **B**

39. A patient having history of gastric reflux and increased gastrin levels After Secretin stimulating test Plasma gastrin levels greater than 1100 pg/mL, Diagnosis?
- a. Destruction of parietal cells
- b. Insulinoma
- c. Zollinger Ellison Syndrome

Ans: **C**

Radiant Notes

Zollinger-Ellison syndrome
- Gastrin-secreting tumor (gastrinoma) of pancreas or duodenum.
- Around 30% occur as part of MEN type I syndrome
- Features:
  - multiple gastroduodenal ulcers
  - diarrhoea
  - malabsorption
- Diagnosis:
- fasting gastrin levels: the single best screen test
- Positive secretin stimulation test: gastrin levels remain elevated after administration of secretin, which normally inhibits gastrin release.

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40. Most common cause of hematemesis:
a. Duodenal ulcer
b. Gastritis
c. Gastric ulcer
d. Esophageal varices
e. Mallory Weiss syndrome
Ans: **A**

41. Most common cause of upper GI bleed is?
a. Esophageal varices
b. Gastric ulcer
c. Duodenal ulcer
d. Mallory Weiss tear
Ans: **C**

42. A 35-year-old man presents to you in emergency department with history of bouts of hematemesis. O/E pulse = 106 /min, BP=90/60. the most appropriate management after initial resuscitation will include:
a. H. pylori eradication
b. Barium swallow
c. OGD
d. Observe
Ans: **C**

43. Best investigation for upper GI bleed is:
a. Barium swallow
b. Manometry
c. H. pylori infection
d. Upper GI endoscopy
Ans: **D**

44. An alcoholic patient presented to emergency department with hematemesis secondary to bleeding varices. What will be the best initial management of this patient?
a. Endoscopy with band ligation
b. Endoscopy with injection sclerotherapy
c. Sengstaken tube insertion
d. IV resuscitation
Ans: **D**

45. An alcoholic patient with upper GI bleed is being managed in ward, conservatively. Next day during OGD, he suddenly collapsed. BP=110/80, pulse =80, what will you do?
a. I/V saline
b. Blood transfusion
c. IV 25% dextrose water
Ans: **C**

46. To precisely localize a bleeding site in GIT most reliable test is:
a. Laparotomy
b. CT scan
c. Radiolabelled scan
d. Capsule endoscopy
Ans: **C**

47. An old female presented to you in ER with blood in stools for last 2 days. (4-6/ days). Before 2 days, she had a history of intermittent loose stools for one year. Best to do?
a. Blood complete
b. Stool D/R
c. Stool C/S
d. colonoscopy
Ans: **D**

Radiant Notes

Upper GI bleed
- Occurs above ligament of Treitz (marks the junction b/w duodenum and jejunum)

Clinical features
- Hematemesis
- Melena

Causes:
- Peptic ulcer disease (Most common—Duodenal)
- Portal hypertension
- Erosive gastritis (due to long term NSAIDS use, alcohol, stress related ulceration)
- Erosive esophagitis (due to GERD)
- Mallory-Weiss tear:
- Vascular anomalies: Telangiectasias

Management
- Resuscitation
- Pharmacological therapy:
  - In IV PPI
  - Octreotide or terlipressin (**Terlipressin >Octreotide)**
- Upper GI Endoscopy
  - All patients with upper tract bleeding should undergo upper endoscopy within 24 hours of arriving in the emergency department

Lower GI bleeding
- Occurs below ligament of Treitz

Clinical features
- Haematochezia

Causes:
- Diverticulosis (Most common)
- Malignancy
- Infectious colitis & IBD
- Anorectal disease

Diagnosis
- Anoscopy and Sigmoidoscopy
  - In patients age <45 years without anemia and small volume bleeding to look for anorectal disease, inflammatory bowel disease, or infectious colitis
- Colonoscopy
  - In patients age >45 years, or any patient with large volume bleeding, colonoscopy is the preferred investigation
  - Diagnostic yield is highest with colonoscopy performed within 24 hours of presentation
- Capsule endoscopy
  - It is used for diagnosis of small bowel bleeding
  - It is used only when upper and lower GI endoscopy do not show the cause

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48. A patient presents to you with GI bleeding. He tells to you that his endoscopy and colonoscopy was normal. What would be your next investigation to look for bleeding site?

a. Enteroscopy
b. Laparoscopy
c. Mesenteric angiography

Ans: **C**

49. Patient with known peptic ulcer disease (diagnosed on the basis of endoscopy findings) had vagotomy and gastrojejunostomy and now again presented with hematemesis, what test will you do to locate site of bleeding:

a. CT abdomen
b. Upper GI endoscopy
c. Tagged RBC scan.

Ans: **C**

50. The most common source of GI bleed in case of liver disease is:

a. Esophageal varices
b. Peptic ulcer
c. Gastric erosions
d. Porto-hypertensive gastropathy
e. Esophageal and gastric arteries

Ans: **A**

51. Upper GI bleed, endoscopy shows polyps, best next step is?

a. Polypectomy e biopsy
b. Ultrasound abdomen
c. LFT
d. CT scan abdomen

Ans: **A**

52. An alcoholic patient presented to ER with upper GI bleeding. initial resuscitation was done by IV fluids, what further intervention should be done to prevent bleeding?

a. EGD
b. Sengstaken tube insertion
c. PPI
d. Surgery

Ans: **A**

53. A known Chronic liver disease patient presents to you in ER with Upper GI bleeding, he was conscious and his BP 130/70, next best treatment:

a. Sclerotherapy
b. Beta blockers
c. Band ligation

Ans: **C**

54. 38-year-old HCV positive patent has developed liver cirrhosis and has esophageal varices for 2 years. What is the treatment of choice?

a. TIPPS
b. Sclerotherapy
c. Beta blockers
d. Band ligation

Ans: **D**

55. An old aged male presented with weight loss. CBC shows decreased Hb. what will you do next?

a. Colonoscopy
b. LFT
c. USG abdomen
d. RFT

Ans: **A**

56. A 40-year-old female presented with complaint of bleeding per rectum, she gives history that its sometimes mixed with mucus. Abdominal pain decreases after defecation what is most appropriate investigation

a. Proctosigmoidoscopy
b. Colonoscopy with biopsy
c. EGD
d. Stool D/R
e. Stool Culture

Ans: **A** (Colonoscopy is relatively contraindicated in active colitis—so better investigation is option A)

57. Most common presentation of non-cirrhotic portal HTN?

a. Ascites
b. SBP
c. Upper GI bleeding

Ans: **C**

Radiant Notes

Esophageal Varices

Initial management

- ABC: patients should ideally be resuscitated prior to endoscopy
- correct clotting: FFP, vitamin K
- Vasoactive agents: Terlipressin > Octreotide
- prophylactic antibiotics have been shown in multiple meta-analyses to reduce mortality in patients with liver cirrhosis

Endoscopy:

- Endoscopic variceal band ligation is superior to endoscopic sclerotherapy.
- NICE recommend band ligation

Sengstaken-Blakemore tube if uncontrolled haemorrhage

TIPSS: (Transjugular Intrahepatic Portosystemic Shunt) if above measures fail

Prophylaxis of variceal haemorrhage:

- Propranolol: reduced rebleeding and mortality compared to placebo

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58. Blatchford score used in?
a. Upper GI bleed
b. Malabsorption
c. Chronic pancreatitis
Ans: **A**

59. 24 years old male admitted after profuse vomiting and hematemesis, he is alcoholic BP is 120/80 mmHg, Hb 11 g/dL, 24 hrs after endoscopy was done which was normal what is most likely dx?
a. Mallory Weiss syndrome
b. CLD
c. Acute pancreatitis
d. Peptic ulcers
Ans: **A** (Endoscopy can be normal in Mallory Weiss Hematemesis cannot be explained by pancreatitis)

60. Intestinal mucosa in lower esophagus, what does it show?
a. Congenital abnormality
b. Due to chronic GERD
c. Inc risk of squamous cell carcinoma
Ans: **B**

61. A young lady presents to you in OPD with history of 3 months of dysphagia of both solid and liquid from the start but it improves with standing. It is occasionally associated with heart burn. Your diagnosis?
a. Achalasia
b. Pharyngeal pouch
c. Bering stricture
d. Esophageal CA
e. Diffuse esophageal spasm
Ans: **A**

62. An adult female comes to you in OPD with complain of difficulty in swallowing of solids and liquids while she is in supine position but improves on standing. What is the likely diagnosis?
a. Achalasia
b. Barrett esophagus
c. Esophageal web
d. Severe GERD
Ans: **A**

63. Most common complication of achalasia is:
a. Esophagitis
b. Bronchitis
c. GERD
d. CA esophagus
e. Aspiration Pneumonia
Ans: **E**

64. Most serious complication of achalasia is:
a. Esophagitis
b. Esophageal carcinoma
c. Aspiration Pneumonia
d. Bronchitis
e. GERD
Ans: **B**

Radiant Notes

Barrett's Esophagus
- Pre-malignant condition in which the squamous epithelium of the esophagus is replaced by metaplastic columnar epithelium containing goblet and columnar cells (specialized intestinal metaplasia)
- It presents as a complication of long-standing GERD (10% cases)
- **Diagnosis:** ---**Endoscopic biopsy**
- **Complications:** Ulceration with stricture formation (most common), Adenocarcinoma

Achalasia
- Dysphagia of both liquids and solids from the start
- Regurgitation of food - may lead to cough, aspiration pneumonia etc
- It is characterized by 3 abnormalities
    - Failure of Lower Esophageal sphincter (LES) to relax with swallowing **(Main defect)**
    - Aperistalisis in the distal two-third
    - Increased resting tone of LES
- **Investigation**
    - CXR------ wide mediastinum fluid level
    - Barium studies---esophagus terminates in narrowing at LES ("bird's beak")
    - Endoscopy--------normal mucosa
    - **Manometry-----Definitive diagnosis**
- **Management**
    - Botulinum toxin injection
    - Pneumatic dilation, ± GERD prophylaxis
    - Surgical repair --- Heller cardiomyotomy + Daily PPI
    - POEM (Per Oral Endoscopic Myotomy)

Globus hystericus
- May be history of anxiety
- Symptoms are often intermittent and relieved by swallowing
- Usually painless - the presence of pain should warrant further

Myasthenia gravis
- Dysphagia with liquids as well as solids
- Other symptoms may include extraocular muscle weakness or ptosis

Esophageal carcinoma
- Typically presents with progressive Dysphagia (**first solids, then liquids**) and weight loss; poor prognosis.

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65. A patient is complaining of epigastric pain and unable to swallow any solid or liquid. The pain subsides on standing up. What is diagnostic test to confirm?
   a. PH monitoring
   b. Urea breath test
   c. Serology
   d. Manometry
Ans: D

66. Most accurate investigation to confirm achalasia?
   a. Chest Xray
   b. Manometry
   c. Upper GI endoscopy
   d. Barium meal
Ans: B

67. 30-year-old smoker presents with difficulty in swallowing. Barium studies shows constriction at gastroesophageal junction and dilatation above
   a. Ca esophagus
   b. Benign stricture
   c. Achalasia
   d. Nut cracker esophagus
   e. Malory Weiss syndrome
Ans: C

68. 30-year-old male patient presented with difficulty in swallowing. he feels there is something in his throat, otherwise he has no problem with swallowing liquids and solids what is the most likely diagnosis?
   a. Pseudobulbar palsy
   b. Achalasia
   c. Globus hystericus
   d. CA Esophagus
Ans: C

69. A 34-year-old female presented with a 3 months history of dysphagia affecting both food and liquids from the start, along with occasional history of heart burn. Barium swallow shows lower 2/3rd dilated esophagus. what is the most likely underlying diagnosis?
   a. Pharyngeal pouch
   b. Gastric adenocarcinoma
   c. Benign strictures
   d. Ca esophagus
   e. Achalasia
Ans: E

70. Patient with dysphagia affects both food and drink, severe chest pain, difficult belching and chest x-ray shows an air-fluid level, what could be the possible diagnosis?
   a. GERD
   b. Achalasia
   c. Diffuse esophageal spasm
   d. Esophagitis
Ans: B

71. Treatment of choice in young patients with achalasia?
   a. PPI therapy
   b. Open surgical myotomy
   c. Laparoscopic Heller myotomy
   d. Pneumatic dilatation
   e. Esophageal resection with gastric pull up
Ans: C

72. A 60-year-old male presents with complaints of dysphagia with regurgitation of food particles ingested few days back and foul breath. On examination, pallor is present along with bilateral lung crepitations. The most likely diagnosis is:
   a. Schatzki ring
   b. Zenker's diverticulum
   c. Corkscrew esophagus
   d. Plummer-Vinson syndrome
Ans: B

73. A young lady presented with fever and dysphagia. Peripheral blood film shows target cells and microcytic hypochromic anemia. Likely diagnosis is
   a. Iron deficiency anemia
   b. Thalassemia intermediate
   c. Anemia of chronic disease
   d. Sideroblastic anemia
Ans: A

74. Feeling lump in throat without any difficulty in swallowing to liquid or solid
   a. Anorexia nervosa
   b. Globus hystericus
   c. Achalasia
   d. Diffuse esophageal spasm
Ans: B

75. A patient of Barret's esophagus is diagnosed as a case of low-grade dysplasia. when her surveillance endoscopy will be done?
   a. Every 2 to 3 years
   b. Every 3 to 6 months
   c. Every 6 to 12 months
   d. Every 1 to 2 years
Ans: B

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76. Squamous cell carcinoma of esophagus is a complication of:
a. Achalasia
b. Barrett's esophagus
c. GERD
d. Nutcracker esophagus
Ans: **A**

77. A 67-year-old man with a 10-year history of gastro-oesophageal reflux disease is investigated for dysphagia. An endoscopy shows an obstructive lesion highly suspicious of oesophageal cancer what is the biopsy most likely to show?
a. Squamous cell carcinoma
b. Normal squamous epithelium
c. Adenocarcinoma
d. Metaplastic columnar epithelium
Ans: **C**

78. Each one of the following is a risk factor for gastric cancer, except.
a. Smoking
b. Blood group "O"
c. Nitrates in diet
d. Pernicious anemia
Ans: **B**

79. Which of the following is the most common risk factor for carcinoma of stomach?
a. *H. Pylori infection*
b. High protein diet
c. High alcohol consumption
d. High fat diet
Ans: **A**

80. Gastric cancer associated with
a. Blood group A
b. Blood group O
c. Blood group AB
d. Female gender
Ans: **A**

81. A 67-year-old man is found to have adenocarcinoma of the stomach. Which single blood group is this pathology associated with?
a. A
b. AB
c. B
d. O
e. None of these
Ans: **A**

82. Treatment of MALT stomach is:
a. H. pylori eradication therapy
b. PPI
c. Chemotherapy
d. Radiation
Ans: **A**

83. Regarding adenocarcinoma of esophagus
a. Most patients present in advanced stage
b. Lower third of esophagus is most commonly involved
c. Painful dysphagia
d. Not associated with Barret's esophagus
e. Barium enema makes the diagnosis
Ans: **B**

84. Which one of the following is not associated with oesophageal cancer?
a. Achalasia
b. Smoking
c. Gastro-oesophageal reflux disease
d. Helicobacter pylori
e. Alcohol
Ans: **D**

85. A 64-year-old woman undergoes an oesophagogastroduodenoscopy (OGD) to investigate difficulties and discomfort with swallowing. A tumour is found in the distal oesophagus. Biopsies are taken. Which is the single most likely histological diagnosis?
a. Adenocarcinoma
b. GI stromal tumour
c. Lipoma
d. Rhabdomyosarcoma
e. Squamous cell carcinoma
Ans: **A**

Radiant Notes

Gastric carcinoma
- Risk factors:
  - H. Pylori (most common)
  - Smoked fish, meat and pickled vegetables
  - Nitrosamines—from dietary amines and nitrites (food preservative).
  - **Blood group A**
  - HNPCC
  - Male predominance
  - Histologically, **stomach carcinoma is almost always adenocarcinoma.**

Gastric MALT lymphoma
- Associated with H. Pylori infection in 95% of cases
- Good prognosis
- Treatment—eradication of H. pylori
- Paraproteinaemia may be present

Esophageal carcinoma
- Typically presents with progressive Dysphagia (**first solids, then liquids**) and weight loss; poor prognosis.

Squamous cell CA	Occurs in upper 2/3rd Risk factors include-- Achalasia, Alcohol, Hot liquids, Cigarettes
Adenocarcinoma-	Occurs in lower 1/3rd Risk factors include Barrett esophagus, obesity, GERD, Cigarettes

Gastrointestinal

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Gastrointestinal

86. A Patient having progressive dysphagia first for solids then liquids. She has a history of some psychiatric disorder as well. Next step?

a. Esophagogastroduodenoscopy (EGD)
b. Barium swallow
c. Manometry
d. H. pylori antibodies

Ans: **A**

87. A 41-year-old male presents to your office with a complaint of epigastric pain for the past several months. He takes over-the-counter antacids, but symptoms have been worse over the past month. He denies any weight loss, vomiting, hematemesis, or melena. He smokes half a pack a day of cigarettes and drinks alcohol socially about once per week. Physical examination is unremarkable except for mild epigastric tenderness. What is the appropriate next step in managing this patient?

a. Continue antacids
b. Barium swallow evaluation
c. Empiric 1-month trial with proton pump inhibitor (PPI)
d. Upper GI endoscopy
e. Observation

Ans: **C**

88. 56 years old female came with 6 weeks history of dysphagia initially to solids than liquids. Last time she visited for anxiety. Now her general physical examination is normal how will you proceed for the diagnosis?

a. Barium swallow
b. Endoscopy
c. Give antacids then review after one week
d. Psychogenic

Ans: B

89. 30-year-old male presents with hematemesis. What is the best investigation?

a. Upper GI endoscopy
b. Barium swallow
c. Manometry
d. H. pylori antibodies

Ans: **A**

90. An old man presents to you in gastroenterology clinic with complain of heart burn and weight loss. He looks pale he had been taking PPI for last 2 months but no response. What will be your further management plan?

a. Upper GI endoscopy
b. Colonoscopy
c. Barium meal
d. Manometry

Ans: **A**

91. 55-year-old male presents with anemia, weight loss and heart burn. No response to PPI, what investigation will you do next?

a. Upper GI endoscopy
b. Colonoscopy
c. Barium meal
d. Manometry

Ans: **A**

92. Patient has mass in epigastrium and develops hematemesis. Which test will you perform?

a. Alpha fetoprotein
b. Ultrasound abdomen
c. CT scan abdomen
d. Endoscopy

Ans: **D**

93. A patient presents to you with complaint of hematemesis on examination you find a mass in epigastric area. What would be you best diagnosis test?

a. USG abdomen
b. CT abdomen
c. Barium enema
d. OGD

Ans: **D**

94. Patient presents with hematemesis, after initial resuscitation, which of the following is the next step?

a. Endoscopy
b. H. pylori eradication
c. Barium swallow
d. Observe

Ans: **A**

95. A 70-year-old man presents with a few months' history of weight loss and dysphagia. What's the appropriate next step?

a. Barium meal
b. Barium swallow
c. Endoscope
d. USS
e. Chest X-ray

Ans: **C**

Radiant Notes

Indications for upper GI endoscopy:

- Age > 55 years
- Symptoms > 4 weeks or persistent symptoms despite treatment
- Dysphagia
- Relapsing symptoms
- Weight loss
- Within 24 hours of Upper GI bleed
- Epigastric mass
- Suspicious barium meal

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96. Patient with dyspepsia was given barium follow through. The first of duodenum was smooth and after that it gets destroyed and becomes floccular. This indicates?

a. Malignancy
b. Ulcer
c. Normal
d. Obstruction
e. Diverticulum

Ans: **C**

97. Barium swallow Feathery appearance in left abdomen

a. Duodenum
b. Jejunum
c. Ileum
d. Stomach

Ans: **B**

98. Claw sign is seen in:

a. Barium enema
b. Barium follow through
c. Barium meal
d. Barium swallow

Ans: **A**

99. The time required for barium meal to clear the stomach is normally

a. 2 hours
b. 24 hours
c. 4 to 5 hours
d. Half an hour

Ans: **A**

100. "Bird's beak " appearance in radiology is seen in?

a. TB intestine.
b. Appendicular lump.
c. Achalasia cardia.
d. Renal stones.

Ans: **C**

101. String sign on barium enema is most often seen with:

a. In the stenotic or non-stenotic phase of Crohns disease
b. With ulcerative colitis
c. The stenotic phase only
d. The non- stenotic phase only

Ans: **A**

102. Lead pipe appearance of colon on barium enema?

a. Crohn
b. Ulcerative colitis
c. T.B colon
d. Amoebiasis

Ans: **B**

103. Stricture seen on barium sallow

a. Ulcerative colitis
b. Crohn's disease
c. Celiac disease

Ans: **B**

104. Hiatus hernia test to be done?

a. Barium meal
b. Barium swallow
c. CXR

Ans: **B**

105. A 34-year-old patient with diagnosis of tropical sprue. which test should be normal?

a. D xylose
b. Jejunal biopsy
c. Barium swallow
d. Barium swallow through
e. Terminal ileum biopsy

Ans: **C**

Gastrointestinal

Radiant Notes

Barium studies

- **Barium meal** examinations are used to study the lower esophagus, stomach and duodenum.
- **Barium follow through** examinations are used to study the small intestine.
- **Barium enema** examinations are used to study the large intestine and rectum

Barium Studies in Different Diseases

Barium enema in Crohns disease	Kantor's string sign or Cobble stone sign
Barium enema in ulcerative colitis	Lead pipe appearance –loss of haustration
Barium in achalasia	Grossly dilated filled Oesophagus with a tight stricture at the gastroesophageal junction resulting in a 'bird's beak' appearance.
Barium studies in Diffuse Esophageal Spasm	Corkscrew appearance

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Next Few MCQs are based on this theory

Radiant Notes

	Ulcerative Colitis	Crohn's disease
Definition	❖ A chronic inflammatory disease that is characterized by inflammation and can involve colon only	❖ A chronic inflammatory disease, that can involve entire gut- from mouth to anus— **but rectum generally spared**
Epidemiology	❖ Males and females appear equally affected ❖ **Smoking has protective effect**	❖ Female > male ❖ **Strong association with smoking**
Features	❖ Inflammation limited to mucosa and submucosal ❖ **No skip lesions** ❖ No granulomas ❖ **Crypt abscess** ❖ Psuedopolyps	❖ **Transmural inflammation** ❖ **Rose thorn ulcers** ❖ **Skip lesions** due to discontinuous spread ❖ Non-caseating Granulomas ❖ Regular abscess ❖ **Cobble-stone appearance**
Clinical features	❖ Malaise, fever, weight loss----- Sometimes ❖ Rectal bleeding ----Nearly always	❖ Malaise, fever, weight loss---- Common ❖ Rectal bleeding -----Sometimes ❖ Abdominal mass palpable in RIF
Extra intestinal manifestation and Complications	Mnemonic: U-PAST-Colitis ❖ Uveitis ❖ Pyoderma gangrenosum ❖ Arthritis (most common overall) Ankylosing spondylitis ❖ Primary Sclerosing cholangitis ❖ Toxic megacolon ❖ Colon carcinoma	Mnemonic: PIE SAC ❖ Perianal disease ---Anal fissure, anal fistulas ❖ Erythema nodosum ❖ Strictures ❖ Aphthous ulcers, Arthritis (most common overall) ❖ Calcium oxalate stones ----renal stones
Radiography	❖ Lead pipe appearance	❖ String sign
Investigation	❖ Serological testing o Antineutrophil cytoplasmic antibody (ANCA) –Positive in UC ❖ Colonoscopy with biopsies confirms the diagnosis	❖ Serological testing o Anti-Saccharomyces cerevisiae antibody (ASCA— Positive in CD ❖ Colonoscopy with biopsies confirms the diagnosis
Treatment	**Inducing remission:** o **Rectal (topical) aminosalicylates or steroids:** ✓ For distal colitis rectal mesalazine has been shown to be superior to rectal steroids and oral aminosalicylates o **Oral aminosalicylates** o **Oral prednisolone** ✓ It is usually used **second-line** for patients who fail to respond to aminosalicylates. ✓ NICE recommend waiting around 4 weeks before deciding if first-line treatment has failed o Severe colitis (>6 bloody stooly/day) ✓ should be treated in hospital ✓ Intravenous steroids are usually given first-line **Maintaining remission** o Oral aminosalicylates e.g. Mesalazine o Azathioprine and mercaptopurine ✓ Methotrexate is not recommended for the management of UC (in contrast to Crohn's disease)	**Inducing remission:** o **Glucocorticoids** o **5-ASA drugs (e.g. mesalazine) ---- 2nd -line to glucocorticoids** o **Azathioprine or mercaptopurine** ✓ May be used as an add-on medication to induce remission but is not used as monotherapy ✓ Methotrexate is an alternative to azathioprine o **Infliximab** ✓ Is useful in refractory disease and fistulating Crohn's o **Metronidazole** is often used for isolated peri-anal disease **Maintaining remission:** ❖ Stopping smoking ❖ Azathioprine or mercaptopurine is used first-line to maintain remission ❖ Methotrexate is used second-line ❖ 5-ASA drugs (e.g. mesalazine) should be considered if a patient has had previous surgery

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106. Which of the following is more characteristic of Crohns disease when compared to ulcerative colitis?
a. Segmental involvement
b. Granulomas
c. Lymph node involvement
d. Rectal like ring
Ans: b

107. Which one of the following features is in favour of ulcerative colitis rather than Crohn's disease?
a. Whole gut wall involved
b. Fistula formation
c. Skip lesions
d. Non-caseating granulomas
e. Rectal involvement
Ans: E

108. Which of the following features best distinguishes Crohn's disease from ulcerative colitis?
a. Oral ulcers
b. Rectal bleeding
c. Continuous colonic involvement on endoscopy
d. Noncaseating granulomas
e. Crypt abscesses
Ans: D

109. Crohn's disease is associated with each one of the following findings, except:
a. Inflammation confined to the mucosa and submucosa
b. Non- caseating granulomas
c. Rose-thorn ulcers
d. Cobblestone pattern
Ans: A

110. Primary sclerosing cholangitis is most associated with:
a. Primary biliary cirrhosis
b. Chron's disease
c. Hepatitis infection
d. Ulcerative colitis
Ans: D

111. Most serious medical emergency in ulcerative colitis is:
a. Bleeding PR
b. Toxic megacolon
c. Fatty liver
d. Scleritis
e. Primary sclerosing cholangitis
Ans: B

112. Complication of ulcerative colitis include all except:
a. Anterior uveitis
b. Ankylosing spondylitis
c. Dermatitis
d. Intestinal perforation
Ans: C

113. Which one of the following is Complication of ulcerative colitis in active disease?
a. Ankylosing spondylitis
b. DVT
c. Sacroiliitis
d. Amyloidosis
e. Autoimmune hepatitis
Ans: A

114. Which systemic complication indicates worsening of Ulcerative colitis?
a. PSC
b. Cholangio carcinoma
c. Gallstones
d. Sacroiliitis
e. Arthritis
Ans: E

115. The most serious complication of IBD?
a. Toxic megacolon
b. Arthritis
c. Pancreatitis
d. Hepatitis
Ans:

116. Which one of the following is acute systemic complication of IBD?
a. Fatty liver
b. Ankylosing spondylitis
c. Sacroiliitis
d. Arthritis of medium size joint
Ans: A

117. Most Common Co-morbidity associated with IBD is?
a. MI
b. Auto Immune thyroiditis
c. DM
d. RA
Ans: B

118. IBD is associated with:
a. Sarcoidosis
b. Lymphoma
c. Carcinoma of stomach
d. Ankylosing spondylitis
Ans: D

119. The most common dermatological complication of IBD:
a. Erythema nodosum
b. Erythema marginatum
c. Erythema migrans
d. Aphthous ulcers
Ans: A

120. 29-year-old male complains of diarrhea and weight loss of 3 months duration. ON examination there is a palpable mass in iliac fossa. What is the diagnosis?
a. Ulcerative colitis
b. Cecal carcinoma
c. Diverticulitis
d. Crohn's disease
Ans: D

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121. A middle-aged lady has history of loose motion for last months, associated with pain is abdomen and weight loss. On examination she has a small mass of soft consistency palpable in right iliac for a most appropriate diagnosis is:

a. Crohn's disease
b. Celiac disease
c. Ulcerative colitis
d. TB intestine
e. Acute appendicitis

Ans: **A**

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122. Patient complaining of chronic diarrhea with on and off symptoms, on examination a mass is palpable in right iliac fossa. His TLC count is normal, what could be the underlying diagnosis?

a. Ulcerative colitis
b. Crohn's disease
c. TB intestine
d. Chronic appendicitis

Ans: **B**

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123. In Crohn's disease which type of renal stones are formed:

a. Oxalate stones
b. Cholesterol stones
c. Uric acid stones
d. Xanthine stones

Ans: **A**

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124. Long-standing cases of Crohn's disease may develop the following complications except:

a. Malabsorption
b. Toxic megacolon
c. Fistula formation
d. Stricture formation

Ans: **B**

---

125. A patient comes to you with complain of diarrhea & weight loss. Routine labs were done along with USG abdomen which showed renal stones. Most likely diagnosis is:

a. Hyper-parathyroid
b. Crohn's disease
c. Ulcerative colitis
d. Toxic Megacolon

Ans: **B**

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126. A patient who is a known case of Crohns disease, now presenting with hematuria and pain in his lumbar region, what could be the cause of his pain and hematuria?

a. Hypoglycaemia
b. Hyperoxaluria
c. Hypooxaluria
d. Hypochlorhydria

Ans: **B**

---

127. Differentiating test between Crohns and ulcerative colitis?

a. MRI
b. Plain x-ray
c. Radionuclide scan
d. Serology

Ans: **D**

---

128. A known case of ulcerative colitis patient, now presenting with jaundice, pruritis, LFTs derange, ERCP was done which showed strictures in intra and extra hepatic ducts. which of the following in most likely diagnosis?

a. PSC
b. PBD
c. Acute hepatitis
d. Acute pancreatitis

Ans: **A**

---

129. Patient with a History of colectomy 6 years back presents with complains of icterus, pruritus and jaundice. Destruction of intrahepatic ducts seen on cholangiography and liver biopsy shows intrahepatic fibrosis. What is the diagnosis

a. PBD
b. Acute hepatitis
c. Acute pancreatitis
d. Primary sclerosing cholangitis

Ans: **D**

---

130. A patient with a diagnosed case of ulcerative colitis, on TPN now presented with dermatitis and alopecia what will be the cause of these symptoms?

a. Copper deficiency
b. Zinc deficiency
c. Mg def.
d. Calcium deficiency

Ans: **B**

---

131. Colonoscopy shows Crohn's features and what to do next?

a. P-ANCA
b. Biopsy
c. ASCA

Ans: **B**

---

132. Comb sign in CT abdomen is seen in

a. Tuberculosis
b. Intestinal lymphoma
c. Ulcerative colitis
d. Crohn's disease

Ans: **D**

---

133. A case of ulcerative colitis now presented with abnormal LFT's. What test to perform for diagnosis.

a. Liver biopsy.
b. Ultrasound of abdomen
c. ERCP
d. Antimitochondrial antibodies

Ans: **C**

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134. Middle aged lady with loose motions and pain abdomen and weight loss for 2 months.

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O/E soft small mass in right iliac fossa. Diagnosis?

a. Crohns
b. Celiac
c. Ulcerative colitis
d. Tuberculous

Ans: A

135. A patient with Crohns disease has painful perianal ulcers. On examination numerous shallow ulcers, first-line treatment?

a. Laxatives
b. Topical mesalazine
c. Oral metronidazole
d. Oral prednisolone

Ans: C

136. Side effect of mesalazine?

a. Interstitial nephritis
b. Acute pancreatitis
c. Agranulocytosis
d. Infertility

Ans: D

137. Side effects of sulfasalazine are all except?

a. Reversible oligospermia
b. Hepatitis C
c. Pancreatitis
d. Paradoxical wording of colitis
e. Hypothermia

Ans: E

138. Treatment of choice for ulcerative colitis involving rectum and sigmoid colon is:

a. Oral steroids
b. Oral Sulphasalazine
c. Topical steroids
d. Topical mesalazine
e. Symptomatic

Ans: D

139. Regarding benefit of 5-ASA compounds in ulcerative colitis

a. First line for severe colitis
b. Reduce risk of colorectal carcinoma

Ans: B

140. Patient has undergone colostomy and is on TPN. She is prone to develop?

a. Hyperglycemia
b. Hypocalcaemia
c. Hypophosphatemia
d. Hyper viscosity

Ans: A

141. A female patient having right sided colostomy done on TPN most likely to develop:

a. Hyperglycemia
b. Hypocalcaemia
c. Hyperkalaemia
d. Hyponatremia
e. Fatty liver

Ans: A

142. A patient with a diagnosed case of ulcerative colitis, on TPN now presented with dermatitis and alopecia what will be the cause of these symptoms?

a. Copper deficiency
b. Zinc deficiency
c. Mg def.
d. Calcium deficiency

Ans: B

143. Indications of total parenteral nutrition is:

a. Acute pancreatitis
b. Acute gastritis
c. Upper GI bleed
d. Unconscious patient

Ans: A

144. For which of the following patients is a home total parenteral nutrition programme most likely to be useful?

a. An untreatable disease
b. 4-day requirement of nutrition
c. Short bowel syndrome
d. Anorexia nervosa

Ans: C

145. Colonoscopy is contraindicated in

a. Acute MI
b. Ulcerative colitis
c. Toxic megacolon

Ans: C

146. The most common tumor of small intestine:

a. Adenocarcinoma
b. Squamous cell CA
c. Hamartoma
d. Lymphoma

Ans: A

147. Male abdominal pain and lump in right iliac fossa, diagnostic test

a. Colonoscopy with biopsy
b. Endoscopy
c. Serology

Ans: A

148. A 46-year-old woman presents with diarrhea, she had previously ileal resection for Crohn's disease. Her inflammatory markers are normal. What is the most likely cause?

a. Bile acid malabsorption
b. Crohns diseases flare
c. Sprue
d. Gastroenteritis
e. Bacterial overgrowth

Ans: A

149. Crohns disease patient with ileal resection and then he developed diarrhea, investigation that you will do?

a. Colonoscopy
b. Schilling test
c. Capsule endoscopy
d. SeHCAT test

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Gastrointestinal

e. D-xylose test

Ans: D

150. A patient with diarrhea comes to you in Emergency department. His sigmoidoscopy shows multiple white plaques adhered to the gastrointestinal mucosa. What is the most likely diagnosis?

a. Crohn's disease
b. Ulcerative colitis
c. ischaemic colitis
d. Pseudomembranous colitis

Ans: D

151. An old patient presents to you in gastroenterology clinic with complain of constipation. He tells you that he had lost 4kg weight in last 4 weeks. On examination, he was pale. What is your diagnosis?

a. Hypothyroidism
b. Hypercalcemia
c. IBS
d. IBD
e. CA colon

Ans: E

152. Patient of 50 years of age had Crohns disease for 10 years. His brother was diagnosed with colorectal carcinoma at age less than 50 years. He thinks he has Carcinoma of Colon risk. When to do surveillance colonoscopy in such patient

a. Every 10 years
b. Every 1 year
c. Every month
d. Every alternate year

Ans: B

153. How will you do screening of 54 years old patient suffering from ulcerative colitis for colorectal carcinoma whose brother had also colorectal carcinoma diagnosed at the age of 50 years

a. Colonoscopy now and then after every year
b. Colonoscopy now and then after every 3 years
c. Colonoscopy now and then after every 5 years
d. Colonoscopy now and then after every 10 years

Ans: A

154. In a patient with ulcerative colitis, the risk of developing colonic Carcinoma is greatest with:

a. Onset of disease during childhood
b. Remitting disease
c. Disease duration more than 5 years

Ans: A

155. Risk of Carcinoma is increase in Ulcerative colitis due to?

a. Toxic megacolon
b. Pancolitis
c. Disease duration less than 10 years
d. Stricture formation

Ans: B

Radiant Notes

Screen for colorectal cancer in inflammatory bowel disease

- Patients with colitis as part of inflammatory bowel disease are at increased risk of colonic cancer.
- All patients with a diagnosis of colitis should have a **screening colonoscopy 10 years after** index presentation, preferably when they are in remission.
- The interval between subsequent colonoscopies is dependent upon the presence of risk factors and appearance at colonoscopy.

High risk	❖ Dysplasia or stricture in the last 5 years ❖ Primary sclerosing cholangitis ❖ First degree relative with colorectal cancer under the age of 50, or ❖ Extensive colitis with moderate to severe inflammation. Patients with high risk features should have **yearly colonoscopy**
Intermediate risk	❖ Extensive mildly active inflammation ❖ History of colorectal cancer in a first degree relative over 50 or Post-inflammatory polyps. **These patients should have 3 yearly colonoscopy**
Low risk	❖ Individuals with extensive colitis but no active inflammation ❖ Only left-sided disease or Crohn's colitis affecting <50% of the colon **screening colonoscopy on 5 yearly bases**

Ulcerative colitis: colorectal cancer

- Risk of colorectal cancer is 10-20 times that of general population
- Factors increasing risk of cancer:
  - Disease duration > 10 years
  - Onset before 15 years old
  - Patients with pancolitis
  - Unremitting disease
  - Poor compliance to treatment

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156. 50-year-old male, complain of constipation, weight loss of 4kg in 2 months. What is the diagnosis?
a. Ca colon
b. Hyperthyroidism
c. Hypercalcemia
d. IBS

Ans: A

157. An elderly male presents to you with constipation, fatigue and weight loss. His labs show Hb 9, TLC 5800, PLT count 320,000, MCV 60fL. What is your diagnosis?
a. Hypothyroidism
b. Hypercalcemia
c. Decreased oral intake
d. CA cecum

Ans: D

158. Which one of the following is a strong risk factor for development of malignant colon carcinoma?
a. Juvenile adenomatous polyposis
b. Familial adenomatous polyposis
c. Family history

Ans: B

159. Boy with colonic disease having multiple adenomatous polyps, the defect found in APC gene is mutated, diagnosis?
a. *Poutz-Jeghers Syndrome*
b. Familial adenomatous polyposis
c. Juvenile Polyposis Syndrome
d. Hereditary nonpolyposis colorectal cancer

Ans: B

160. Most common area of CA Colon?
a. Cecum
b. Ascending colon
c. Transverse colon
d. Appendix
e. Sigmoid colon

Ans:

161. A diagnosed case of CA colon admitted in emergency. If you suspect mets in such a patient. Which investigation will you order?
a. CT abdomen with IV contrast
b. Proctosigmoidoscopy
c. Colonoscopy
d. MRI abdomen

Ans: A

162. A 55-year-old diagnosed case of CCF. Presents to you with 3 months history of pain in left lumbar region, dull in nature and often radiates to back. Pain was precipitated by meal and started 1hr after meal. He also complains of bleeding per rectum. What would be your diagnosis?
a. Mesenteric angina
b. Mesenteric ischemia
c. Ischemic colitis
d. Abdominal malignancy
e. Ulcerative colitis

Ans: B

163. 70-year-old male patient presented with severe abdominal pain and bloody stools, he also had irregular pulse (Atrial fibrillation), on radiography x-ray thumbprint sign present, what is your diagnosis?
a. Mesenteric ischemia
b. Mesenteric angina
c. ischemic colitis
d. peptic ulcer

Ans: A

✓ Thumb printing radiological finding can be seen in mesenteric ischemia, ischemic colitis, ulcerative colitis and infectious colitis

164. A known case of SLE taking frequently steroids and feeling pain in the epigastrium after meal and feeling pain in abdominal and lumbar region, what is the cause?
a. Peptic ulcer
b. Mesenteric ischemia
c. Diverticulosis
d. Mesenteric vasculitis

Ans: D

165. 89 years old male with severe constipation have a multiple diverticuli on colonoscopy, what is the next most appropriate management?
a. Laxatives
b. Increase intake of dietary fibers
c. Stool softener

Ans: B

Radiant Notes

Mesenteric ischemia	Ischemic colitis
Small bowel	Large bowl
Usually due to thromboemboli (atrial fibrillation, endocarditis and other causes of emboli)	Usually due to non-occlusive blood flow
Clinical features ❖ Severe Abdominal pain develops usually after 2 hours of eating ❖ Sometimes bloody stools ❖ Weight loss	Clinical features ❖ Sudden abdominal pain ❖ With bloody stools ❖ Abdomen is usually tender
Diagnosis: ❖ Angiography	Diagnosis: ❖ colonoscopy
Treatment: ❖ Surgery, angioplasty	Treatment: ❖ Supportive ❖ Bowel resection

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Gastrointestinal

166. A patient with numerous hamartomas in intestine and has pigmented mucosa and skin:
a. Peutz-Jeghers Syndrome (PJS)
b. Turcot syndrome
c. Gardner syndrome
Ans: **A**

167. A young medical student complaining of abdominal pain with bloating, altered bowel habits, stool D/R done there is no blood in stool what is most likely Diagnosis?
a. Inflammatory bowel disease
b. Irritable bowel syndrome
c. Hepatitis
Ans: **B**

168. Which of the following is the classic presentation of irritable bowel syndrome?
a. Altered stool frequency
b. Tenesmus
c. Abdominal pain relived by defecation
d. Nocturnal
Ans: **C**

169. A medical student of 3rd grade presented with pain in abdomen, indigestion and alternating bowel habits for last 3 months. On examination there is mild tenderness in left iliac fossa. The most appropriate diagnosis is:
a. Irritable bowel syndrome
b. Crohn's disease
c. Ulcerative colitis
d. Celiac disease
Ans: **A**

170. All of the following are features of IBS except:
a. Passage of mucus
b. Alternating bowel habits
c. Blood in stool
Ans: **C**

171. A patient passing mucus in stool. Abdominal pain relieved by defecation and alternate bowel habits. Diagnosis?
a. IBS
b. IBD
c. Abdominal TB
Ans: **A**

172. Feature that insist you to consider alternative diagnosis in patient with IBS
a. Tenesmus
b. Change in frequency of stool
c. Weight loss
Ans: **C**

173. A 30 years old patient presented with passing 4 to 5 stools per day with mucus and lower abdominal pain relieves after defecation and disturbed sleep what is most likely Diagnosis?
a. UC
b. Crohn's disease
c. IBS
Ans: **C**

174. Typical scenario of IBS. Test to do:
a. Stool microscopy
b. Stool culture
c. Stool leucocytes
Ans: **A**

175. Which test is initially used to distinguish between IBD and IBS?
a. Stool culture
b. Stool microscopy
c. Stool leucocytes
d. Stool lactoferrin
Ans: **D** (Faecal calprotectin (FC) is also used)

Radiant Notes

Irritable Bowel Syndrome (IBS)

Rome III diagnostic criteria: recurrent abdominal pain/discomfort ≥3 days per month in the last 3 months, and ≥2 of the following:
- Pain/discomfort improves with defecation.
- Symptom onset is associated with a change in the frequency of the stool.
- Symptom onset is associated with a change in the form of the stool.

The following are supportive, but not essential to the diagnosis:
- Abnormal stool frequency
- Abnormal stool form (lumpy/hard/loose/watery)
- Abnormal stool passage (straining, urgency, feeling of incomplete evacuation)
- Passage of mucus
- Bloating

Diagnosis of IBS Less Likely in Presence of "Red Flag" Features
- Weight loss
- Nocturnal defecation
- Anemia
- Blood or pus in stool
- Abnormal gross findings on flexible sigmoidoscopy

Treatment:
For mild symptoms, diet and lifestyle changes (e.g., avoiding dairy products, excess caffeine).
Manage the symptoms below as indicated:
- Diarrhea—diphenoxylate, loperamide.
- Constipation—colace, psyllium, cisapride.
- Abdominal pain—antispasmodics (e.g., pinaverium, trimebutine, peppermint oil, cimetropium/dicyclomine), antidepressants, rifaximin

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176. A girl presented with complaint of chronic diarrhea, abdominal pain, weight loss and iron deficiency anemia. What is the diagnosis

a. Celiac disease
b. Inflammatory bowel disease
c. Chronic pancreatitis

Ans: **A**

177. In celiac disease, the most common lesion is:

a. Mucosal atrophy
b. Villous atrophy
c. PAS positive macrophages

Ans: **B**

178. In patient with celiac disease, best test to perform

a. Endoscopy with jejunal biopsy
b. Endoscopy with duodenal biopsy
c. Endoscopy with ileal biopsy
d. Endoscopy with Gastric biopsy

Ans: **B** (Even Though MRCP pass medicine say jejunal biopsy but all other standard books are with duodenal biopsy (2nd part of duodenum) 4-6 biopsy specimen to be taken)

179. Which of the following is not associated with celiac disease?

a. HLA DQ2
b. More in males
c. Cause malabsorption
d. Associated with CA esophagus

Ans: **B**

180. A 30 years old male patient presents to you with complaint of diarrhea for one week. He is diagnosed case of celiac disease about 4 years back and is well controlled on diet. He also has a history of significant weight loss. Which investigation should be done?

a. Stool examination
b. Endoscopy
c. Endoscopic biopsy
d. USG abdomen
e. CT abdomen

Ans: **C**

181. A 30-year-old male, known case of celiac disease who is already on dietary restriction, develops diarrhea. What investigation will you perform?

a. Repeat endoscopy and biopsy
b. CT scan abdomen
c. Colonoscopy
d. S. amylase levels

Ans: **A**

Radiant Notes

Celiac Disease (aka sprue, gluten sensitive enteropathy)

- Coeliac disease is caused by a T cell mediated hypersensitivity reaction to gluten which causes intestinal inflammation and atrophy.
- Repeated exposure **leads to villous atrophy** which in turn causes malabsorption.
- **Clinical features:**
  - Females are affected twice more than males
  - "Classic" symptoms of malabsorption-------------Diarrhea, weight loss, Malnutrition and anemia
  - **Dermatitis herpetiformis**
    - Present in 10% of cases and characterized by intensely pruritic, papulovesicular lesions on extensor surfaces of elbows, knees and buttocks
- **Associated with:**
  - Type I diabetes mellitius, autoimmune thyroid disease, autoimmune hepatitis
  - HLA-DQ2, HLA-DQ8
  - **Dermatitis herpetiformis** (intensely pruritic, papulovesicular lesions on extensor surfaces of elbows, knees and buttocks)
  - ↓Bone density
  - Unexplained iron-deficiency anemia, or other unspecified anemia
  - Hyposplenism
- **Lab findings:**
  - Serological tests: Serologic tests should be performed in all patients in whom there is a suspicion of celiac disease
  - **IgA tissue transglutaminase (IgA tTG)** antibody 95% sensitivity and specifity----strongly recommended test
  - An IgA level should be obtained in patients with a negative IgA tTG antibody when celiac disease is strongly suspected because up to 3% of patients with celiac disease have IgA deficiency.
  - Anti-endomysial and anti-gliadin antibodies are no longer recommended
  - **Duodenal biopsy (gold standard)** which shows
    - Blunting of villi
    - Lymphocytes in lamina propria
    - Crypt hyperplasia
- Moderately ↑risk of malignancy (e.g., T-cell lymphoma)
- **d-xylose test:** passively absorbed in proximal small intestine; blood and urine levels ↓with mucosa defects or bacterial overgrowth, **normal in pancreatic insufficiency.**
- Treatment: gluten-free diet.

Gastrointestinal

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182. 40 years old male known case of celiac disease was well controlled before but for last few days presenting with diarrhea and fecal occult positive, which investigation should be done?

a. CT SCAN abdomen
b. Duodenal Endoscopy with biopsy
c. Anti TTG
d. Colonoscopy

Ans: B

183. A patient presents to you in OPD with chronic diarrhea. His Hb=7gm/ dl, MCV = 60. TLC = Normal, pH=3.22. there is no blood in stool. what will be your diagnosis?

a. Whipple disease
b. Celiac disease
c. Cystic fibrosis
d. None of above

Ans: B

184. A patient with celiac disease and malabsorption has which investigation normal:

a. Terminal ileum biopsy
b. Jejunal aspirate
c. Barium follow through

Ans: C

185. Which of the following is not a recognised complication of coeliac disease?

a. Osteoporosis
b. Oesophageal cancer
c. Subfertility
d. Hypersplenism

Ans: D

186. First-line screening test for patients with celiac disease?

a. Tissue transglutaminase antibodies
b. Anti-gliadin antibodies
c. Xylose absorption test
d. Anti-endomysial antibodies

Ans: A

187. Young patient presents with chronic diarrhea. How will you differentiate celiac from pancreatitis?

a. D xylose test
b. Jejunal biopsy
c. Barium follow through
d. Trial of gluten free diet

Ans: A

188. In celiac disease what is the cause of under lying diarrhea?

a. Decrease mucosal absorption/Mucosal atrophy
b. Lactose intolerance
c. Bacterial over growth
d. Enterocytes releasing some cholecystokinin

Ans: A

189. Cause of villous atrophy in celiac disease?

a. TNF alpha
b. IL6
c. IL 1
d. Interferon Alpha
e. Interferon Gamma

Ans: E (Ref: Textbook of Gastroenterology by Tadataka Yamada, David H. Alpers, Anthony N. Kalloo · 2011)

190. Which test to differentiate between malabsorption (celiac disease) and maldigestion (pancreatic insufficiency)

a. Barium follow through
b. Trial of gluten free diet
c. D-xylose absorption test
d. Jejunal biopsy

Ans: C

191. Person with diarrhoea. Abdominal pain. Weight loss abdominal bloating. Duodenal biopsy shows shortening and blunting of villi, diagnosis?

a. Celiac disease
b. Whipple disease
c. IBS
d. Crohns disease

Ans: A

192. Most common clinical feature associated with celiac disease

a. Oral ulcers
b. Fatigue
c. Anemia
d. Depression

Ans: A

193. Which of the following skin diseases is associated with celiac disease?

a. Acanthosis nigricans
b. Erythroderma
c. Dermatitis herpetiformis

Ans: C

194. Skin lesion associated with celiac disease?

Ans:

- There was no option of dermatitis herpetiformis and neither the people have recalled any option other than pyoderma gangrenosum (Which is the least possible option for me)
- So that's why remember that with celiac disease skin manifestation are in order of preference dermatitis herpetiformis, atopic dermatitis, cutaneous vasculitis, urticaria, alopecia aerate, pyoderma gangrenosum

195. Anti-endomysial antibodies are mostly:

a. IgM
b. IgG
c. IgD
d. IgE
e. IgA

Ans: E

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196. A 22 years old male presents to you with diarrhea. On examination rash on elbows and knees. His lab reports show endomysial antibody +ive. What will you suggest him?
   a. Avoid gluten in diet
   b. Take carbohydrate only
   c. IV fluids for first 3 days
   d. Eat only vegetable and fruits

Ans: A

197. Gold standard test for Diagnosis of steatorrhea
   a. CT- scan
   b. Colonoscopy
   c. 72-hour Fecal-fat test

Ans: C

198. 11-years-old boy having diarrhea, biopsy showed villous atrophy of small intestine, not improving on gluten free diet?
   a. Giardiasis
   b. Carcinoid tumor
   c. Whipple disease
   d. Immunoproliferative disease
   e. Celiac disease

Ans: A

199. Child with diarrhea not responding to anti-diarrheal medications. On biopsy there is partial villous atrophy of jejunum with PAS positive macrophages. Most likely cause is?
   a. Celiac disease
   b. Whipple disease
   c. Giardiasis
   d. Bacterial overgrowth

Ans: B

200. A 46-year-old man is being investigated for indigestion. Jejunal biopsy shows deposition of macrophages containing PAS-positive granules. What is the most likely diagnosis?
   a. Bacterial overgrowth
   b. Coeliac disease
   c. Tropical sprue
   d. Whipple's disease

Ans: D

201. A patient presented with diarrhea. All labs were done. Her stool osmolality is equal to the serum osmolality. What do you think she might have?
   a. VIPoma
   b. Celiac disease
   c. Whipple disease

Ans: A

202. A patient presented with copious diarrhea, chest tightness and red complexion you will suspect:
   a. IBS
   b. IBD
   c. Carcinoid syndrome
   d. Cholera

Ans: C

203. Which of the following supports a diagnosis of VIPoma?
   a. Achlorhydria
   b. Hypoglycaemia
   c. Pellagra

Ans: A

Radiant Notes

Whipple disease (Mnemonic: FOAMY WHIpped cream PASsed in a CAN)

- Characterized by infiltration of small intestinal mucosa by FOAMY macrophages (Tropheryma WHIPplei) that stain positive with PAS reagent Infection
- Cardiac symptoms, Arthralgias, and Neurologic symptoms (ataxia, dementia, and seizures) are common.
- Diagnosis:
  - ✓ **Jejunal biopsy**—shows macrophages containing PAS
  - ✓ Diagnosis made by **PCR** of extraintestinal fluids (cerebrospinal, synovial) or tissue (lymph nodes, synovium, endocardium)
- Management:
  - ✓ A randomized controlled trial demonstrated 100% remission with either
    - **Ceftriaxone 1g** IV BD or **meropenem 1g** IV TDS for 2 weeks followed by
    - **Trimethoprim sulfamethoxazole 160/800 mg** BD for 12 months

VIPoma:
- 90% arise from pancreas
- large volume diarrhea → Weight loss, Dehydration, Hypokalaemia, Hypochlorhydia (WDHH)

Carcinoid syndrome
- Carcinoid is a slow growing neuroendocrine tumour and symptoms of diarrhoea and flushes occur as a consequence of metastases to the liver and hence systemic release of vasoactive compounds such as 5-HT and bradykinin.
- The best treatment for symptoms of carcinoid is the somatostatin analogue, octreotide, which improves symptoms and prognosis in carcinoid syndrome.

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Gastrointestinal

203. A male alcoholic patient presented in ER with complains of severe epigastric pain and vomiting. Your diagnosis will be:
a. GERD
b. Acute cholecystitis
c. Acute pancreatitis
d. Mallory Weiss tear
e. Duodenal ulcer

Ans: **C**

204. The most common cause of death in acute pancreatitis is:
a. Respiratory failure
b. Renal failure
c. Septicaemia
d. Shock

Ans: **A**

205. The most common cause of death in acute pancreatitis is
a. Renal failure
b. Heart failure
c. Septicaemia
d. ARDS
e. Shock

Ans: **D**

206. An old alcoholic patient presents to you with the diagnosis of chronic pancreatitis. He is on mercaptopurine drug. What is the cause of his pancreatitis?
a. Gall stones
b. Alcohol
c. Malignancy
d. Mercaptopurine
e. Age

Ans: **B**

207. Pancreatitis is associated with all EXCEPT:
a. Gall stones
b. Hypercalcemia
c. Hypotension
d. Alcohol
e. Hyperlipidaemia

Ans: **C**

208. A middle age alcoholic male presents with complain of abdominal pain. His ERCP was done one day ago. What do you think will be the most likely cause of his pain?
a. Acid peptic disease
b. Acute pancreatitis
c. Acute cholecystitis
d. MI

Ans: **B**

209. Middle age male alcoholic patient develops epigastric pain after post ERCP what is your diagnosis
a. Pancreatitis
b. Perforated duodenal ulcer
c. MI

Ans: **A**

Radiant Notes

Acute pancreatitis

- Causes/predisposing factors (**GET SMASHED**)
  - Gallstones, Ethanol, Trauma, Steroids, Mumps, Autoimmune (PAN), Scorpion stings, Hyperlipidemia./Hypercalcemia, ERCP **(pancreatitis is the commonest complication of ERCP)**, Drugs (including azathioprine mesalazine*, didanosine and diuretics).
- Clinical manifestations include epigastric abdominal pain radiating to back, anorexia, and nausea.
- There is an association with increased serum amylase and lipase.
- Characteristics include hypocalcemia caused by loss of circulating calcium into precipitated calcium–fatty acid soaps.

Chronic pancreatitis

- Chronic inflammation, atrophy, calcification of the pancreas
- Major causes are alcohol abuse (80%) and idiopathic.
- Mutations in CFTR (cystic fibrosis) can cause chronic pancreatic insufficiency.
  Manifestation→ steatorrhea, fat-soluble vitamin deficiency (night blindness, Osteomalacia), diabetes mellitus.
- Amylase and lipase may or may not be elevated (almost always elevated in acute pancreatitis).
- Investigation:
  - Abdominal x-ray shows pancreatic calcification in 30% of cases
  - **CT Abdomen:**
    - More sensitive at detecting pancreatic calcification.
    - Sensitivity is 80%, specificity is 85%

Pancreatic adenocarcinoma

- **Associated with CA 19-9 tumor marker (also CEA, less specific).**
- Risk factors→ Tobacco use, Chronic pancreatitis (especially > 20 years), Diabetes
- Presentation:
  - classically painless jaundice (obstructive jaundice)
  - loss of exocrine function (e.g. steatorrhoea)
  - migratory thrombophlebitis (Trousseau sign) is more common than with other cancers
- Diagnosis:
  - Ultrasound has a sensitivity of around 60-90%
  - High resolution CT scanning is the investigation of choice
- Treatment: **Whipple procedure**, chemotherapy, radiation therapy

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210. Patient underwent ERCP. He develops epigastric pain radiating to back after ERCP. What is the diagnosis?
a. Acute cholecystitis
b. Acute pancreatitis
c. Gastric perforation
d. Duodenal ulceration
Ans: B

211. A 38-year-old female with a long history of alcohol excess presents with abdominal pain, weight loss and bulky stools. What is the most suitable investigation to confirm the diagnosis?
a. Endoscopic ultrasound
b. Endoscopic retrograde Cholangiopancreatography
c. Ultrasound abdomen
d. CT abdomen
Ans: D

212. Foul smelling stools, occasionally floating is a feature of:
a. Pancreatic insufficiency
b. VIPoma
c. Bacterial overgrowth
Ans: A

213. A patient develops foul smelling diarrhea for 6 months. His stool floats over water and there is history of weight loss. What is the diagnosis?
a. Celiac disease
b. Pancreatic insufficiency
c. Pernicious anemia
d. Bile acid malabsorption
Ans: B

214. Alcoholic male with history of pancreatitis, epigastric pain which got severe in past two months. C. T abdomen shows cyst of size 7x8 cm and increased peritoneal fluid surrounding small gut loops
a. Acute pancreatitis
b. Adenoma pancreas
c. Pancreatic pseudocyst
d. Metastatic Carcinoma
Ans: C

215. Which one of the following has no effect on pancreas?
a. GIP
b. VIP
c. Secretin
d. Cholecystokinin
e. Acetylcholine
Ans: E

216. Carcinoma of pancreas commonly occurs in
a. Head of pancreas
b. neck
c. Tail
d. Body
Ans: A

217. Migratory thrombophlebitis occurs MOST COMMONLY in which cancer?
a. Ca Lung
b. Ca Prostate
c. GIT Ca
d. Ca Pancreas
Ans: D

218. Migratory thrombophlebitis is NOT seen in which cancer?
a. Ca Lung
b. Ca Prostate
c. GIT Ca
d. Ca Pancreas
Ans: B

219. Recurrent thrombophlebitis is a feature of which Carcinoma?
a. Colon carcinoma
b. Pancreatic adenocarcinoma
c. Breast carcinoma
d. Hepatocellular carcinoma
Ans: B

220. A Patient who is alcoholic presents with abdominal pain, on investigation his serum calcium is low & D-xylose test negative (normal), Diagnosis?
a. Celiac disease
b. Crohns disease
c. Chronic pancreatitis
d. Tropical sprue
Ans: C

221. A patient with pancreatitis, developed shock and shortness of breath. diagnosis?
a. Renal failure
b. Heart failure
c. Septicaemia
d. ARDS
Ans: D

222. Most common cause of pancreatic calcification is?
a. Idiopathic
b. Hypercalcaemic pancreatitis
c. Alcohol
d. Protein calorie malnutrition
Ans: C

223. An alcoholic patient developed abdominal pain; Pancreatic calcification formed. Reason?
a. Alcohol
b. Hypercalcemia
c. Thyroid carcinoma
Ans: A

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224. Which one of the following diabetes is found in chronic pancreatitis?

a. Type I
b. Type II
c. Type IIIc
d. All of the above

Ans: **C**

225. A patient presented with progressive worsening of jaundice, hepatomegaly weight loss, ALT 50, ALP 900, stool for occult blood +ive, what is most likely Dx?

a. CA head of pancreas
b. HCC
c. CA Colon
d. Biliary obstruction

Ans: **A**

226. A 76-year-old male presents to you with jaundice and weight loss with no history of abdominal pain. His labs show bilirubin = 8 indirect bilirubin =2. ALP= 700, your diagnosis is:

a. Chronic pancreatitis
b. Acute hepatitis
c. Gallstones obstruction
d. CA pancreas

Ans: **D**

227. Most useful marker of severity for acute pancreatitis?

a. Serum lipase
b. Serum amylase
c. CRP
d. TLC

Ans: **C**

228. 45-year-old man with history of gall stone presents with epigastric pain, radiating to back, which one of the following tests is useful in diagnosis of acute pancreatitis?

a. Serum amylase
b. Serum lipase
c. Serum calcium
d. Serum trypsinogen

Ans: **B**

229. A patient with pancreatitis, what investigation will you do?

a. Serum amylase
b. Serum calcium
c. ESR
d. CBC

Ans: **A** (No option of lipase was given in paper)

230. Patient who is alcoholic and with triglyceride of 1400 comes to u with complains of recurrent abdominal colic

a. Gallstones due to alcohol
b. Due to chronic pancreatitis
c. Due to cholesterol gall stones

Ans: **B**

231. A patient presented with epigastric pain and vomiting, diagnosed as acute pancreatitis. His triglycerides level more than 1400. Best treatment among the following

a. Niacin
b. Fenofibrates
c. Atorvastatin
d. Probenecid

Ans: **B**

232. Persistent elevated serum amylase suggests

a. Abscess
b. Necrosis
c. Multiple organ failure
d. Pseudocyst
e. Fistula formation

Ans: **D**

233. An Alcoholic patient presented to you with complaint of yellow discoloration and weight loss, most specific sign to confirm diagnosis?

a. Blumberg sign
b. Courvoisier's law

Ans: **B**

234. Cholecystitis scenario ... what is best test to see obstruction of cystic duct?

a. Ultrasound biliary tree
b. HIDA scan

Ans: **B**

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235. **A 54-year old female presents with fatigue and xerostomia, bloods tests reveal the following bilirubin 33 pmol/l ALP 292 u/l ALT 47 u/l what is the most likely diagnosis?**
   a. Systemic lupus erythematous
   b. Infectious mononucleosis
   c. Primary biliary cirrhosis
   d. Autoimmune hepatitis

Ans: **C**

236. **30-year-old female presents with itching. Her total bilirubin is 1.2, ALT 65, ALP 500 What is the diagnosis?**
   a. Autoimmune hepatitis
   b. Primary biliary cirrhosis
   c. Celiac disease
   d. Primary sclerosing cholangitis

Ans: **B**

237. **Which of the following is the most appropriate test for primary biliary cirrhosis?**
   a. AMA antibodies
   b. ANA
   c. Liver biopsy
   d. Ultrasound abdomen

Ans: **A**

238. **40-year-old female presents with pruritis and jaundice. What is the most likely diagnosis?**
   a. Primary sclerosing cholangitis
   b. Autoimmune hepatitis
   c. Primary biliary cirrhosis
   d. Viral hepatitis

Ans: **C**

239. **Diagnostic test for PBC is:**
   a. Liver biopsy
   b. Anti-mitochondrial antibodies
   c. ANA antibodies
   d. USG abdomen

Ans: **B**

240. **Which type of antibodies will be seen in primary biliary cirrhosis?**
   a. Antimitochondrial antibodies
   b. Anti-smith
   c. Anti Ro
   d. Anti CCP
   e. None of the above

Ans: **A**

241. **A middle-aged woman presents to you in OPD with progressive jaundice, xerostomia, pruritus and fatigue. Her USG shows normal echotexture of liver with normal biliary channels. Her total bilirubin= 1.2, ALT =65, ALP 290 Most likely cause would be:**
   a. Primary biliary cirrhosis
   b. Ulcerative colitis
   c. Primary sclerosing cholangitis
   d. Acute hepatitis
   e. Autoimmune hepatitis

Ans: **A**

Radiant Notes

Biliary tract disease

- Clinical features:
  - Pruritus, jaundice, light-coloured stool, dark urine, hepatosplenomegaly.
  - Typically, with cholestatic pattern of LFTs (↑ conjugated bilirubin, ↑ cholesterol, ↑ ALP).

Primary Sclerosing Cholangitis

- Is rare except in association with inflammatory bowel disease, especially ulcerative colitis.
- Characteristics include inflammation, fibrosis (classically known as "onion skin fibrosis"), and **stenosis of intrahepatic and extrahepatic bile ducts**. It eventually develops into biliary cirrhosis.
- There is an associated increased incidence of cholangiocarcinoma
- **Features:**
  - Cholestasis: jaundice and pruritus
  - Right upper quadrant pain
  - Fatigue
- Investigation:
  - MRCP --initial investigation of choice
  - **ERCP—Gold standard for establishing the diagnosis.**
  - pANCA may be positive 60-80%
  - Liver biopsy--- limited role

Primary Biliary Cirrhosis

- Autoimmune reaction
- Features: Mnemonic: 3M's.
  - Most common in Middle-aged women.
  - Anti-Mitochondrial antibodies (98% of patients and are highly specific)
  - ↑ serum IgM
- Characteristics include **severe obstructive jaundice**, itching, fatigue and hypercholesterolemia;
- Hypercholesterolemia leads to **cutaneous xanthoma formation.**
- Associated with other autoimmune conditions (e.g., Sjogren syndrome, Hashimoto thyroiditis, CREST, rheumatoid arthritis, celiac disease).
- Management: cholestyramine, ursodeoxycholic acid, fat soluble vitamins, **liver transplantation (very effective)**

Secondary Biliary Cirrhosis

- Due to extrahepatic biliary obstruction, → ductal injury & inflammation.
- Complications → ascending cholangitis and bacterial inflammation of ducts.

Gastrointestinal

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242. A female Patient presented with pruritis, fatigue what is most likely Dx?
a. PSC
b. PBC
c. Hepatitis
Ans: B

243. A 45-year-old man with a history of ulcerative colitis is admitted to the hospital with 2 to 3 weeks of RUQ abdominal pain, jaundice, and pruritus. He has no fever and a normal WBC count. Endoscopic retrograde cholangiopancreatography (ERCP) shows multifocal strictures of the both intrahepatic and extrahepatic bile ducts with intervening segments of normal and dilated ducts. Which of the following is the most likely diagnosis?
a. Acute suppurative cholangitis
b. Cholangiocarcinoma
c. Primary sclerosing cholangitis (PSC)
d. Choledocholithiasis with resultant biliary strictures
Ans: C

244. A patient presents to you in OPD with complains of backache. She is diagnosed case of PBC. Most common cause of backache in this patient is:
a. Osteomalacia
b. Paget's disease
c. Multiple myeloma
Ans: A

245. A female patient comes to you in OPD. She tells you that she has developed primary biliary cirrhosis (told by some doctor) and asks for the most curative treatment. What do you think which one of the following treatments will cure her disease?
a. Ursodiol
b. Methotrexate
c. Liver transplantation
d. Glucocorticoids
Ans: C

246. Case of Sclerosing cholangitis. Definitive Diagnosis?
a. liver biopsy
b. ERCP
c. MRCP
d. P-ANCA
Ans: B

247. Most common organism of post ERCP sepsis?
a. E. Coli
b. Campylobacter
c. Klebsiella
d. Vibrio cholera
Ans: A

248. Primary sclerosing cholangitis gold standard investigation
a. MRCP
b. ERCP
c. Biopsy
d. Serology
Ans: B

249. A patient under went for ERCP. now he has developed ascending cholangitis. which of the following organism has caused it?
a. E. Coli
b. Campylobacter
c. Klebsiella
d. Vibrio cholera
Ans: A

250. Another scenario of young gentleman with LFTs deranged with ALP raised only. H/O chronic diarrhea.
a. PSC
b. PBC
c. Obstructive jaundice
Ans: B

251. Middle age female was going to dermatologist from 3 years for Pruritis she sent her to physician who examined and noted hepatomegaly and ordered LFTs only ALP raised was given what is diagnosis?
a. PBC
b. PSC
c. Hemochromatosis
Ans: A

252. Pt with Hx of partial gastrectomy, jaundice, liver enlarged ultrasound shows no gall stone, CBD Dilated 12cm, test to perform
a. ERCP
b. CT abdomen
c. Ultrasound abdomen
d. Endoscopic ultrasound
Ans: A

253. Best Initial investigation for primary sclerosing cholangitis after LFTs found elevated?
a. MRCP
b. ERCP
c. Ultrasound abdomen
d. CT abdomen
Ans: A

254. Which of the following prophylactic antibiotic is used prior to ERCP?
a. Ciprofloxacin
b. Penicillin
c. Clindamycin
d. Tetracycline
Ans: A

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255. A 55-year-old man with a history of gallstone presents with pain in right upper quadrant. His sclera is yellow and feverish body. What is the most likely diagnosis?

a. Pancreatic cancer
b. Biliary colic
c. Ascending cholangitis
d. Acute cholecystitis

Ans: **C**

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256. A patient known case of Primary biliary cirrhosis presented with multiple bruising, which vitamin deficiency is mostly seen in PBC patient?

a. Vit K def
b. Vit C def
c. Vit b6 def
d. Vitamin b12 deficiency

Ans: **A**

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257. Patient with right hypochondrial pain of gradual onset developed jaundice. palpable mass in Right hypochondrium, diagnosis?

a. Choledochal cyst
b. Biliary atresia
c. Hydatid cyst
d. Hepatic cyst
e. Reidel lobe of liver

Ans: **A**

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258. *Pt with jaundice*, deranged LFTS, increase PT/APTT not responding to vitamin K. Diagnosis?

a. Viral hepatitis
b. CA Head of Pancreas
c. PBC
d. Hemolytic anemia

Ans: **C---few students recalled no option of PBC, instead they recalled acute liver necrosis—which is also correct** (In case of parenchymal liver diseases, there may be minimal or absent response to vitamin K---ref Trauma: Resuscitation, Perioperative Management, and Critical Care page 645).

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Gastrointestinal

259. A young patient presents to you in OPD with gait abnormalities and psychiatric symptoms. He also has abnormal LFTs. First diagnosis that comes to your mind will be?

a. Chronic hepatitis
b. Hemochromatosis
c. Cerebellar ataxia
d. Wilson Disease
e. Drug induced parkinsonism

Ans: D

260. Most accurate Diagnostic test of choice for Wilson's disease is?

a. 24-hour urinary copper
b. Slit lamp examination for KF rings
c. Liver biopsy
d. Serum ceruloplasmin levels

Ans: C

261. Screening test in a patient whose sibling has Wilson disease?

a. 24-hour urinary copper levels
b. Decreased serum ceruloplasmin.
c. Liver biopsy
d. Serum copper

Ans: A

262. Patient known case of Wilson disease started on penicillamine, during follow up what to check?

a. Serum ceruloplasmin
b. Serum copper
c. 24 hours urinary copper

Ans: A

263. Which one of the following is most suggestive of Wilson's disease?

a. Reduced hepatic copper concentration
b. Reduced serum copper
c. Reduced 24hr urinary copper excretion
d. Reduced serum caeruloplasmin

Ans: D

264. Young male presented with chorea, Kayser Fischer ring and abnormal LFT's, treatment of choice in this stage of disease?

a. Sulfasalazine
b. Glucocorticoids
c. Penicillamine
d. Liver transplant

Ans: C

265. A 30-year-old female patient with Wilson's disease on penicillamine for many years. Now she reports worsening of symptoms and jaundice despite medication, what is the right course of action now?

a. Continue penicillamine
b. Trientine
c. Oral zinc
d. Liver transplant

Ans: D

Radiant Notes

Wilson disease

- Also known as hepatolenticular degeneration.
- Autosomal recessive disorder of copper metabolism resulting in accumulation of toxic levels of copper.
- Normally: copper is absorbed in small intestine, taken into liver, where it is stored and incorporated into ceruloplasmin.
- In Wilson's disease: **copper incorporation into ceruloplasmin and its excretion into bile are impaired resulting in copper accumulation in tissues especially liver, brain and cornea**
- Clinical manifestations:
  - Liver→hepatitis, fulminant hepatic failure, Micronodular cirrhosis.
  - Eyes→ **Kayser-Fischer rings** (greenish-brown discoloration of cornea)
  - CNS→ tremors, parkinsonism
- Diagnosis:
  - Decreased serum ceruloplasmin
  - **↑ 24 hr urinary excretion of copper,**
  - Serum copper low
  - **Liver biopsy (Gold standard)**
- Treatment:
  - **Penicillamine** will chelate copper and remove it from the body. Additional therapies are:
  - Zinc: interferes with intestinal copper absorption
  - Trientine: an alternate copper-chelating compound
  - Liver transplant (if unresponsive to therapy or fulminant liver failure)

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266. Patient came with complain of heart failure, proteinuria, decreased sexual function, hepatomegaly. What is the likely cause?

a. Hemosiderosis
b. Hemochromatosis
c. Amyloidosis
d. Nephrotic syndrome

Ans: **C**

✓ Included this question here, just so that you know the difference,
✓ Proteinuria is against hemochromatosis

267. A patient presented to you with diabetes mellitius and skin pigmentation, on further inquiry he has liver cirrhosis and hypogonadism, what is he suffering from?

a. Wilson
b. Hemochromatosis
c. α-1 antitrypsin deficiency
d. SLE

Ans: **B**

268. 21 years old male case of Thalassemia major on regular blood transfusion developing ascites, Spleenomegaly and congestive heart failure, ferritin also raised likely complication would be

a. Aplastic crisis
b. Acute leukaemia
c. Wilson disease
d. Secondary hemochromatosis

Ans: **D**

269. Best diagnostic investigation of idiopathic hemochromatosis?

a. Serum ferritin
b. Liver biopsy with iron stores
c. Transferrin saturation
d. Serum ion

Ans: **B**

270. Scenario of Hemochromatosis. What will be lab finding?

a. Decrease serum ferritin
b. Decreased serum iron
c. Increase serum ferritin and decrease TIBC
d. Decrease serum ferritin and increase TIBC

Ans: **C**

271. A middle-aged male patient with hereditary hemochromatosis presents to you in OPD. His lab shows Hb=16.6, TLC =6.7, PLT=158, Serum iron >150mcg/dL, ferritin >500ng/mL. The most appropriate step in the management of this patient is?

a. Venesection
b. Deferoxamine
c. Deferiprone
d. N-acetylcysteine

Ans: **A**

272. Patient with hemochromatosis develops hepatic Vein thrombosis. What is the treatment?

a. Venesection
b. Deferoxamine
c. Liver transplantation
d. Penicillamine

Ans: **C**

Radiant Notes

Hemochromatosis

Definition

- Excessive iron storage causing multiorgan system dysfunction (liver, in particular) with total body stores

Etiology:

- Primary (Hereditary) Hemochromatosis
  - Most often caused by a mutation in the Hfe-gene on chromosome 6.
- Secondary hemochromatosis
  - Parenteral iron overload (e.g. transfusions), Chronic hemolytic anemia: thalassemia, Excessive iron intake

Clinical features: Mnemonic **ABCCDH**

- Joints: ---Arthralgia (any joint, but especially MCP joints)
- Skin: ---- Bronze or grey (due to melanin, not iron)
- heart: ----Cardiomyopathy (dilated)
- Liver: ----Cirrhosis (30%), HCC (200x increased risk)
- Diabetes
- Hypogonadotropic hypogonadism (impotence, decreased libido, amenorrhea).

Diagnosis:

- Screening/initial test
  - Markedly elevated serum iron and serum ferritin
  - Elevated transferrin saturation
  - Decreased TIBC
- Confirmatory/Gold standard
  - Liver biopsy (Can be identified on biopsy with Prussian blue stain)

Treatment

- Regular venesection aiming for ferritin <50 ng/ml.
- Consider liver transplantation in advanced cases.

Gastrointestinal

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Gastrointestinal

273. 30 years old male patient presents with right sided abdominal pain. ALP 600, ALT 47 and Bilirubin 6 mg/dl. Diagnosis?

a. Cholangitis
b. Cholecystitis
c. Cholangiocarcinoma
d. Obstructive jaundice

Ans: **D**

274. A young boy presented with jaundice during Ramadan, Investigations show bilirubin 4.8 mg/dL and SGPT 45 IU/L, AST 90 IU/L. What the diagnosis?

a. Gilbert syndrome
b. Acute hepatitis
c. Dubin-johnson syndrome
d. Sickle cell anemia

Ans: **A**

275. A patient presented with yellow discoloration of skin and is asymptomatic, labs done which showed, Bilirubin 2 mg/dL SGPT 40 IU/L, ALP 120 IU/L. Diagnosis?

a. Gilbert syndrome
b. Viral hepatitis
c. Alcoholic hepatitis
d. Obstructive jaundice

Ans: **A**

276. A young man during Ramadan has jaundice, bilirubin 3.4 mg/dL, what will you advise?

a. Hep-B & Hep-C screening
b. Start interferon and ribavirin.
c. Reassure.

Ans: **C**

277. Patient presented with jaundice, LFTs normal, indirect bilirubin around 2.5, and total bilirubin around 3.5, he also gives history of fever

a. Acute hepatitis
b. Alcoholic hepatitis
c. Dubin-johnson syndrome
d. Gilbert syndrome

Ans: **D**

278. A patient presented with liver disease, LFT's shows increased ALP, on liver biopsy dark granules with in it??

a. Dubin-johnson syndrome
b. Crigler-najjar type 1
c. Crigler-najjar type 2
d. Gilbert syndrome

Ans: **A**

279. Regarding Gilbert SYNDROME which of the following is true?

a. It's type of conjugating defect
b. Bilirubin level never raise more than 5mg/dL

Ans: **A**

Radiant Notes

Jaundice

- Refers to yellow discoloration of skin, sclera and mucous membrane

Unconjugated Hyperbillirubinemia

- **AST elevated**
- Hemolytic jaundice:
  - ✓ Due to ↑ production of UCB from hemolysis.
  - ✓ Caused by: sickle cell anemia, hereditary spherocytosis, hemolytic disease of new-born etc.
- Congenital non-hemolytic anemia:
  - ✓ Due to ↓ uptake or conjugation of UCB
  - ✓ Crigler-najjar syndrome
  - ✓ Gilbert syndrome--- **Occurs in adults in response to alcohol, fasting, intercurrent illness and strenuous exercise.**

Hepatocellular Jaundice

- Due to inability of liver to transport bilirubin into bile, as a consequence of parenchymal liver disease
- Causes mixed Hyperbillirubinemia i.e. elevation of both UCB and CB
- In viral hepatitis: **ALT>AST**, mild elevation of ALP and GGT

  Alcoholic hepatitis: **AST>ALT (mnemonic- Make a toAST with alcohol)** mild elevation of ALP and GGT

Conjugated Hyperbillirubinemia (Cholestatic (Obstructive) Jaundice)

- **Marked elevation of ALP and GGT**
- Decreased intra-hepatic bile flow
  - ✓ Primary biliary cirrhosis
  - ✓ Autoimmune hepatitis
  - ✓ Congenital conjugated hyperbillirubinemia:
    - o Dubin-johnson syndrome:
      - Defective bilirubin transport, black liver-due to dark pigment granules deposition
  - ✓ Rotor syndrome:
    - Same as Dubin-johnson syndrome but no black liver.
- Decreased extra hepatic bile flow
  - ✓ Carcinoma of head of pancreases
  - ✓ Biliary strictures
  - ✓ Choledocholithiasis

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280. A patient presented with yellow tinge skin, his labs showed AST 200 IU/L, ALT 110 IU/L. Diagnosis?
   a. Cholestatic jaundice
   b. Alcoholic hepatitis
   c. Viral hepatitis

Ans: B

281. An old man presented with malaise for the past 1 year. Labs show HB: 10, TLC 6800, platelets 211000, MCV 85, ferritin normal, serum iron 130 and TIBC 320. The morphology of all the cells is normal on bone marrow smear but sustainable iron deposits were also seen. What is the likely cause?
   a. Hep C
   b. SLE
   c. Fanconi anemia
   d. Atrophic gastritis

Ans: A

282. Vertical transmission of hepatitis C is?
   a. 3%
   b. 0.3%
   c. 30%
   d. 0.03%

Ans: A

283. Transmission risk of HIV through needle is?
   a. 3%
   b. 0.3%
   c. 30%
   d. 0.03%

Ans: B

284. Transmission risk of hepatitis B via needle is?
   a. 3%
   b. 0.3%
   c. 30%
   d. 0.03%

Ans: C

285. Chronic active hepatitis can be differentiated from chronic persistent hepatitis by:
   a. Liver histology
   b. Viral load
   c. Ultrasound scanning
   d. HBeAg detection

Ans: A

286. Which of the following is more common in a health worker?
   a. HIV
   b. Syphilis
   c. Dengue fever
   d. Viral hepatitis

Ans: D

287. A large number of young adults are being referred from rural with jaundice, RHP, nausea vomiting. The most effective preventive measure is:
   a. Hepatitis A vaccination
   b. Boiling of water
   c. Improved sanitation

Ans: B

Radiant Notes

Hepatitis

Hepatitis A	Hepatitis B	Hepatitis C
HAV-RNA virus	HBV-**DNA** virus	HCV-RNA virus
Orofecal route	Parenteral Sexual Vertical	Parenteral Sexual Vertical
No HCC	**HCC (major association)**	HCC
	Associated with **Polyarteritis nodosa Aplastic anemia**	Associated with ↑ **risk B-cell NHL, ITP, autoimmune hemolytic anemia**

Hepatitis D	Hepatitis E	Autoimmune Hepatitis
HDV-RNA virus	HEV-RNA virus	Increased serum immunoglobins and **anti-smooth muscle antibodies.** Acute hepatitis: fever, jaundice **Amenorrhoea** (common) Raised IgG levels liver biopsy: **'piecemeal necrosis',**
Highest fatality rate	Orofecal route	
Association with HBV	**Fulminant hepatitis in pregnant women**	
Incidence ↑ in IV drug users		

Transmission

	HBV	HCV	HIV
Vertical	70-90%	3-5%	25-30%
Needle	20-30%	2-3%	0.3%

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Gastrointestinal

288. 14-year-old girl presents with jaundice, fever and amenorrhea. Which test will you perform?

a. Anti-mitochondrial antibodies
b. Anti-smooth muscle antibodies
c. Anti HAV Ig M
d. Amylase

Ans: B

289. Which one of the following viruses is transmitted via orofecal route?

a. HBV
b. HCV
c. HDV
d. HEV

Ans: D

290. A 23-year-old nurse is reviewed in occupational health following a needle stick injury from a man known to be a carrier of hepatitis B. which one of the following would appear first during acute hepatitis B infection?

a. HBsAg
b. HBeAg
c. Anti-HBs
d. HBeAg

Ans: A

291. A Medical student gets prick from a Patient who is HBsAg +ive, anti HCV +ive but HIV negative, he does his lab screening and lab shows HBsAg -ive, Anti-HBs +ive, Anti-HBc -ive. What is the status of his liver serology?

a. Active hepatitis
b. Previous Vaccination
c. Past HBV infection, now cleared
d. Active Hep C infection

Ans: B

292. Persistent HBV infection shows following result:

a. HBsAg +ive and anti HBc +ive
b. Anti HBS -ive and anti HBc -ive
c. HBeAg -ive and HBsAg -ive
d. HBeAg +ive and Anti-HBc -ive

Ans: A

293. Patient has HBsAg positive, anti-HBc +ive showing IgG, While HBeAg Negative. What is his hepatitis B Status?

a. Previous vaccination
b. Active infection with high infectivity
c. Chronic infection with low infectivity
d. Previous infection, now cleared

Ans: C

294. A person has HBsAg +ive, Anti-HBc IgM +ive, and Anti-HBs negative, this shows?

a. Acute hepatitis B
b. Persistent hepatitis B
c. Window period

Ans: A

Radiant Notes

Hepatitis B Serological Patterns

STAGE	HBsAg	HBeAg	Anti-HBc	Anti-HBs
Acute Infection	positive	positive	positive (IgM)	Negative
Chronic Infection	positive	positive	positive (IgG)	negative
Immune from Previous Infection	negative	negative	positive	positive
Immune from Vaccination	negative	negative	negative	positive
Window Period	negative	negative	positive (IgM)	negative

Immunization:

- 3 doses, at 0, 1 and 6 months, and a booster dose after 5 years

Testing for anti-HBs:

- Only recommended for those at risk of occupational exposure (i.e. Healthcare workers) and patients with CKD.
- In these patients anti-HBs levels should be checked 1-4 months after primary immunization

Anti-HBs level (mIU/ml)		Response
>100	Indicates adequate response	No further testing required. Should still receive booster at 5 years
10–100	Suboptimal response	One additional vaccine dose should be given If immunocompetent no further testing is required
< 10	Non-responder	Test for current or past infection. Give further vaccine course (i.e. 3 doses again) with testing following. If still fails to respond then HBIG would be required for protection if exposed to the virus

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295. A 55-year-old male working as laboratory technician came for regular check-up, his labs showed HBsAg negative, Anti-HBc (core antibody) is +ive, diagnosis?
- a. Active infection
- b. Chronic infection
- c. Previously vaccinated
- d. Window period

Ans: **D**

296. A patient presents to you in OPD. his lab shows HBsAg +ive anti-HBS IgG +ive and anti-HBS –ive, ALT=40, how will you manage such a patient?
- a. Counsel him
- b. Interferons
- c. Ribavirin
- d. Lamivudine
- e. Interferons+ ribavirin

Ans: **A**

297. Which one of the following is a maker of HBV replication?
- a. IgM antibody
- b. HBV DNA
- c. HBs antigen
- d. HBe antigen
- e. HBc antigen

Ans: **D**

298. Which of the following set of lab results indicate active hepatitis B infection?
- a. HBsAg-ive, HBsAb +ive, HBeAg-ive
- b. HBsAg +ive, HBsAb –ive, HBeAg +ive
- c. HBsAg –ive, HBsAb –ive, HBeAg – ive
- d. None of the above

Ans: **B**

299. A nurse has got needle prick injury from an HCV positive 1 months back, now which investigation you will do to check infection?
- a. ALT with Anti HCV
- b. HCV PCR
- c. HCV PCR with ALT
- d. Ultrasound abdomen

Ans: **B**

✓ The antibodies take 6-8 weeks to become detectable while PCR can detect virus in 1-2 weeks

300. A patient diagnosed case of hepatitis C has taken antiviral treatment, which test you will advise to know the effect of therapy?
- a. HCV PCR
- b. HCV genotype
- c. ALT levels
- d. Liver biopsy

Ans: **A**

301. Antiviral given in hepatitis B to
- a. Reduced viral load
- b. Reduce risk of HCC
- c. Conversion to CLD

Ans: **A**

302. Best marker to check endemicity of hepatitis B?
- a. HBsAg
- b. HBeAg
- c. Anti-HBeAg
- d. Anti-HBc

Ans: **A**

303. In fulminant hepatitis, which is the best prognostic factor?
- a. Bilirubin
- b. Ascites
- c. Creatinine
- d. Prothrombin time

Ans: **D**

304. Nurse who had received vaccination against hep B now had needle stick injury from hep B+ patient. what to give to nurse?
- a. Booster dose
- b. Active passive immunization
- c. Only passive immunization
- d. Nothing

Ans: **A**

305: Nurse comes to you with needle prick and reports show anti-HbS positive and LFTS normal
- a. Immunoglobulins and vaccination
- b. Reassurance
- c. Peg interferon plus ribavirin
- d. Lamivudine

Ans: **B**

306. 36 years old female in 3rd trimester, labs revealed HBsAg positive and HBeAg positive, treatment for her baby?
- a. Counsel and reassure
- b. Immunoglobulin
- c. Vaccination
- d. Vaccination and immunoglobulin

Ans: **D**

307. In hepatitis C patients, which type is best responsive to treatment?
- a. Genotype 1 on PCR
- b. Genotype 3 on PCR
- c. Genotype 4 on PCR

Ans: **B**

Gastrointestinal

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Gastrointestinal

309. A nurse has suffered needle stick injury of a patient who is HBsAg positive. She is not vaccinated for HBV. What is the management?

a. HB vaccination only
b. Peg interferon and ribavirin
c. HB vaccination and immunoglobulins
d. HB vaccination and ribavirin

Ans: **C**

310. A young patient developed fulminant hepatic failure (scenario). Which indicates increase mortality?

a. PT
b. Serum Albumin
c. Total Bilirubin
d. ALT / AST

Ans: **A**

311. Which test will help to differentiate from acute from chronic liver diseases?

a. X-ray abdomen
b. Serum albumin
c. Serum bilirubin
d. SGPT

Ans: **B**

312. In liver disease, which one of the following indicates increased severity?

a. Increased PT
b. Increased APTT
c. Increased Bleeding time
d. Increased albumin

Ans: **A**

313. A 49-year-old female has developed chronic liver disease secondary to Hepatitis B infection. He has recently felt unwell and his Hb level increased from 15g/dL. on examination he has tender liver. Your next investigation test is?

a. ALP
b. SGPT
c. α Fetoprotein
d. Hepatitis B PCR

Ans: **C**

314. A young adult used some injection for muscle bulk, on investigation he had Hb 19.6 g/dL, haematocrit 58%, and hypospermia, there is increased risk of which cancer?

a. Seminoma
b. Hepatocellular carcinoma
c. Rhabdomyoma
d. Renal cell carcinoma

Ans: **B**

315. Investigation of choice for hepatic adenoma is?

a. USG abdomen
b. CT-scan abdomen
c. MRI
d. ERCP

Ans: **B**

316. Which one of the following is Investigation of choice to diagnose Hepatocellular carcinoma is?

a. α-fetoprotein
b. USG abdomen
c. Biphasic CT-scan of abdomen
d. Liver biopsy

Ans: **D**

317. Male patient with accidental finding of right liver enlargement, asymptomatic, all the viral markers are negative, alfa fetoprotein normal and there is no cirrhosis, diagnosis?

a. Haemangioma
b. Hepatic adenoma
c. Hepatocellular carcinoma

Ans: **A**

Radiant Notes

Hepatic adenoma

- Definition:
  - Benign glandular epithelial tumour
- Risk factors:
  - female, age 20-50, estrogen (OCP, pregnancy)
- Clinical features:
  - asymptomatic, 25% present with RUQ pain or mass, may present with bleeding
- Investigations:
  - CT (well-demarcated masses)
  - MRI
- Treatment
  - stop anabolic steroids or OCP
  - Excise, especially if large (>5 cm), due to risk of transformation to hepatocellular carcinoma and spontaneous rupture/hemorrhage

Hepatocellular Carcinoma (Malignant Hepatoma)

- Most common malignant tumor of liver in adults
- Associated with HBV (+/− cirrhosis) and all other causes of cirrhosis (including HCV, alcoholic and non-alcoholic fatty liver disease, autoimmune disease, hemochromatosis, α1-antitrypsin deficiency, Wilson disease) and specific carcinogens (e.g., aflatoxin from Aspergillus).
- Findings: jaundice, **tender hepatomegaly**, ascites, **polycythemia**, anorexia.
- Spreads hematogenously.
- Diagnosis:
  - ↑ **α-fetoprotein (Screening test)**
  - Ultrasound
  - Contrast CT/MRI
  - **Biopsy (Definitive diagnosis)**

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318. Alcoholic patient develops distended abdomen with ascites and tender liver. which investigation should be performed next?
a. Serum bilirubin
b. Doppler ultrasound of abdomen
c. Alfa fetoprotein measurement
d. Ascitic fluid examination

Ans: **C**

319. Which of the following suggest an uncomplicated ascites due to portal hypertension from cirrhosis?
a. Haemorrhage
b. SAAG>1.1
c. Protein> 25g /1

Ans: **B**

320. Reliable sign to detect the presence of ascites is:
a. Puddle sign
b. Fluid thrill
c. Shifting dullness
d. Flank dullness

Ans: **A**

321. How will you check the presence of massive ascites on examination?
a. Shifting dullness
b. Puddle sign
c. Fluid thrill
d. Direction of superficial vein

Ans: **C**

322. A patient has minimal ascites, clinician would use which sign to check for fluid?
a. Shifting dullness
b. Puddle sign
c. Fluid thrill
d. Umbilical position

Ans: **B**

323. A patient presented with abdominal distension, what is the most diagnostic physical sign to check ascites?
a. Auscultatory percussion
b. Shifting dullness
c. Fluid thrill
d. Position of umbilicus

Ans: **C**

✓ The above question was also recalled by students as just abdominal distention—with no ascites mentioned---in such cases assuming that every abdominal distention is not ascites---option A will be right

324. A 68-year-old alcoholic male presented with liver cirrhosis and mild ascites. Which of the following features will be present in this patient?
a. Increase serum Na+
b. Increase vascular resistance
c. Reduced serum Na+ excretion
d. Reduced Urinary Na+ excretion

Ans: **D** (Both C and D correct)

325. A 68-year-old man diagnosed case of liver cirrhosis has developed ascites. What is the mechanism for the development of ascites?
a. Portal HTN
b. Hypoalbuminemia
c. Congestive heart failure
d. Hypothyroidism

Ans: **A**

Gastrointestinal

Radiant Notes

Ascites

- It refers to the accumulation of excess fluid in the peritoneal cavity
- Signs
  - Abdominal distention
  - Fluid thrill—massive ascites
  - Shifting dullness—moderate ascites
  - Puddle sing—minimal ascites
- Causes:
  - SAAG (Serum Albumin Ascitic fluid gradient) = Serum albumin – Ascites albumin
  - SAAG is helpful in distinguishing ascites of liver origin from ascites of peritoneal origin
  - Ascites is called Exudative when total protein concentration > 25g/L and SAAG is < 1.1g/dL
  - Ascites is called Transudative when total protein concentration < 25g/L and SAAG is > 1.1g/dL

Portal HTN-related ascites SAAG ≥ 1.1 g/dL	Non-Portal HTN-related ascites SAAG ≤ 1.1 g/dL
Cirrhosis Acute Hepatitis Liver malignancy Right Sided HF Budd-Chiari syndrome Splenic vein thrombosis Schistosomiasis	Peritonitis (e.g. TB) Peritoneal carcinomatosis Pancreatitis Vasculitis Hypoalbuminemia (Nephrotic syndrome) Meigs syndrome Hypothyroidism

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326. A 38-year-old male suffering from Chronic hepatitis- C has developed right sided hydrothorax and refractory ascites. What is the best treatment?

a. TIPSS
b. Liver transplant
c. Recurrent paracentesis
d. Albumin infusion
e. Furosemide

Ans: **A**

327. Most common Complication of TIPPS therapy

a. Hepatic necrosis
b. Congestive cardiac failure
c. Hepatic encephalopathy
d. Sepsis
e. Esophageal hemorrhage

Ans: **C**

328. A patient with cirrhosis and massive ascites, he was started on daily Na+ restriction, fluid restriction and spironolactone 100mg therapy, but no response after 5 days. Next step?

a. TIPSS
b. Add furosemide
c. Liver Transplant
d. Increase Spironolactone dose

Ans: **D**

329. A patient presented with gross ascites; how will u treat him initially?

a. Spironolactone
b. Furosemide
c. Thiazide
d. TIPSS

Ans: **A**

330. A cirrhotic patient developed hydrothorax and refractory ascites. He is considered to be a candidate for liver transplantation. What should be done until his transplantation?

a. TIPSS
b. Recurrent paracentesis
c. Albumin infusion

Ans: **A**

331. Absolute contraindication to Liver transplant?

a. Sepsis
b. Cholangiocarcinoma
c. Extrahepatic malignancy
d. Portal vein thrombosis

Ans: **C** (Both A and C correct---CPSP ☹)

332. Which of the following is the best Treatment for Hepatopulmonary syndrome?

a. Liver transplant
b. Pulmonary artery embolization
c. Peritoneal dialysis
d. Ascetic fluid aspiration

Ans: **A (Also for hepatorenal syndrome—liver transplant)**

333. A patient who is known case of CLD presented with fever, pain in abdomen & ascites. One step for best management?

a. Cefotaxime
b. Ciprofloxacin
c. Norfloxacin
d. Co-trimoxazole

Ans: **A**

Radiant Notes

Ascites Treatment

- Restriction of sodium intake to 40mmol/day i.e. no added salt diet
- Restriction of water to 1-1.5L/day only when serum sodium is less than 125mmol/L
- Avoid NSAIDS and Corticosteroids
- Diuretics:
  - Spironolactone (Aldosterone antagonist) is the drug of choice
  - Spironolactone starting at 100 mg daily and increased gradually to 400mg
  - Chronic administration produces Gynaecomastia.
  - Eplerenone 25 mg once daily does not cause Gynaecomastia.
  - The aim of diuretic therapy should be to produce a net loss of fluid approaching 700 mL in 24 hours (0.7 -1 kg weight loss)
  - Loop diuretic, such as furosemide 20–40 mg or bumetanide 0.5 mg is added if response is poor
- Refractory ascites and treatment:
  - It refers to the ascites in which the patient does not respond to doses of 400mg of spironolactone and 160mg furosemide.
  - Large Volume Paracentesis:
    - It is the first line treatment of refractory ascites
    - Removes 3-5 L per day or until dry
    - Albumin replacement (6-8 gm/L of ascites removed) to support circulation
    - It must not be performed in the presence of spontaneous bacterial peritonitis as it increases the risk for acute renal failure.
  - Trans-Jugular intra-hepatic-portosystemic shunt (TIPSS):
    - It is also used for refractory ascites
    - No mortality benefits.

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335. Most common organism causing SBP is:

a. Klebsiella
b. Legionella
c. Bacteroides
d. S. Aureus
e. E. coli

Ans: **E**

336. Treatment of choice in spontaneous bacterial peritonitis

a. Oral metronidazole
b. Cefotaxime
c. Norfloxacin
d. Ofloxacin

Ans: **B**

337. A 55-year-old male patient decompensated cirrhosis has complained of fever and pain in abdomen. The most appropriate diagnosis is:

a. Hepatocellular carcinoma
b. Subacute peritonitis
c. Secondary peritonitis
d. Perforated peritonitis

Ans: **B**

338. SBP is diagnosed on ascetic fluid by checking:

a. Albumin
b. Neutrophils
c. LDH
d. Lymphocytes

Ans: **B**

339. A 48-year-old man is known to have alcoholic liver cirrhosis presented with complaint of fever abdominal pain and abdominal distention. What should be done next?

a. Albumin infusion
b. Ascitic tap
c. Liver biopsy
d. Ultrasound of the abdomen

Ans: **B**

340. Ascitic tap done of a patient which shows gram negative rods. Organism responsible are

a. E. coli
b. Streptococcus
c. Staphylococcus

Ans: **A**

Radiant Notes

Primary/Spontaneous Bacterial Peritonitis (SBP)

- Complicates ascites, but does not cause it (occurs in 10% of cirrhotic ascites); higher risk in patients with GI bleed
- **Clinical features**:
  - fever, chills
  - abdominal pain
  - ileus
  - hypotension
  - worsening encephalopathy
  - acute kidney injury
- **Causative agent:**
  - Gram-negatives compose 70% of pathogens:
  - **E. coli (most common),**
  - Streptococcus
  - Klebsiella
- **Diagnosis**:
  - Paracentesis with ascitic fluid **absolute neutrophil count (ANC) > 250 cells/mm3.**
- **Treatment**
  - **IV Cefotaxime**

Secondary Bacterial Peritonitis

- Usually results from a perforated viscus or surgical manipulation
- Most common aerobe: E. coli
- while most common anerobe: Bacteroides

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Gastrointestinal

341. Commonest cause of NASH is:

a. Alcohol
b. Obesity
c. Diabetes
d. Hypertension

Ans: B

342. 45 years old female obese, on ultrasound fatty liver, increased ALT, treatment?

a. Metformin
b. Insulin
c. Pioglitazone

Ans: A

343. Macrovesicular steatosis is seen in:

a. Pregnancy
b. NASH
c. Alcoholism
d. Drug induced

Ans: **C** (Seen in Both B and C, but more typical for alcohol)

344. A 23-year-old young lady in 3rd trimester of her pregnancy presented with high grade fever with chills, bilirubin 3mg/dL, inc PT, INC aPTT, What's your diagnosis

a. Cholestatic jaundice
b. Acute fatty liver of pregnancy
c. Hepatitis E
d. Haemolytic

Ans: **B**

345. A 28 weeks pregnant lady developed fever, abdominal pain and vomiting. Her ALT, AST are raised. What is your best treatment?

a. Termination of pregnancy
b. I/V steroids
c. I/V magnesium sulphate
d. I/V ondansetron

Ans: **A**

346. A young lady with BMI >35 presented with right hypochondrial pain and mild derangement of LFT's with negative viral profile. What would be the cause?

a. Non-alcoholic fatty liver disease
b. Liver abscess
c. Hypertriglyceridemia

Ans: **A**

347. Non-alcoholic fatty liver disease is associated with:

a. DM
b. HTN
c. IHD
d. Obesity

Ans: **D**

348. A female who has a history of type 2 diabetes mellitus, obesity, hypertension and consumes two pints of alcohol per day is found to have mildly deranged LFTs. What is the most likely cause?

a. Alcoholic Liver Disease
b. Non-alcoholic fatty liver disease
c. Autoimmune hepatitis
d. Metformin related

Ans: **B**

Radiant Notes

Alcoholic Liver Disease

- Occurs in 3 forms
  - Alcoholic steatosis (alcoholic fatty liver disease)
  - Alcoholic hepatitis
  - Alcoholic cirrhosis
- AST >>ALT (Make a toAST with alcohol)

Alcoholic Steatosis	○ **Macrovesicular** fatty change. ○ That may be reversible with alcohol cessation.
Alcoholic Hepatitis	○ Long-term consumption. ○ Swollen and necrotic hepatocytes with neutrophilic infiltration. ○ **Mallory bodies** (intracytoplasmic eosinophilic inclusions of damaged keratin filaments).
Alcoholic Cirrhosis	○ Final and usually irreversible form. ○ Regenerative nodules → chronic liver injury→ ↑ portal hypertension and end-stage liver disease. ○ **Sclerosis around central vein**

Non-Alcoholic Fatty Liver Disease (NAFLD)

- Risk factors:
  - Metabolic syndrome (insulin resistance)
  - Obesity → fatty infiltration of hepatocytes
- It is largely caused by obesity and describes a spectrum of disease ranging from:
  - Steatosis ------------ fat in the liver
  - Steatohepatitis ---- fat with inflammation, **non-alcoholic steatohepatitis (NASH)**
  - Progressive disease may cause fibrosis and liver cirrhosis
- Most common cause of Cryptogenic Cirrhosis.
- Increased risk of HCC
- *(ALT > AST (Lipids)*
- Treatment: Weight reduction and metformin

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349. **The most common cause of pyogenic liver abscess is?**
a. Cholangitis
b. Appendicitis
c. Cholecystitis
d. Choledocholithiasis

Ans: A

350. **The most common organism causing pyogenic liver abscess?**
a. Bacteroides
b. E. Coli
c. Streptococcus
d. Staphylococcus

Ans: B

351. **How much time it takes for lesion of liver abscess to completely disappear on ultrasound?**
a. 3 weeks
b. 2 months
c. 4 months
d. 6 months

Ans: D

352. **A 30-year-old male presents with RHC pain and fever. Few days later he complains of chest pain. CXR shows right sided pleural effusion. What is the diagnosis?**
a. Ruptured liver abscess
b. Pneumonia
c. Tuberculosis
d. Lung abscess

Ans: A

353. **A patient has amoebic liver disease. He took metronidazole and abscess subsided. After completion of treatment, what should be given in a single dose to the patient?**
a. Ceftriaxone
b. Chloroquine
c. Diloxanide furoate

Ans: C

354. **Which of the following infection is most likely related with multiple cysts?**
a. E. coli
b. Echinococcus
c. Taenia Solium
d. Entamoeba histolytica

Ans: B

355. **Patient presented with abdominal pain, diagnosed as Left liver lobe amoebic abscess of 8 cm size, treatment?**
a. Metronidazole + Aspiration
b. Aspiration only
c. Metronidazole only

Ans: A

Radiant Notes

Hydatid liver disease
- Causative organism-- Echinococcus granulosus
- Features--------- Cysts in liver (75%), lung, bone and brain
- Diagnosis
  - Serology
    - Casoni test= 80% positive
    - Indirect hemagglutination test most accurate test
  - CT scan = investigation of choice
- Treatment—
  - Albendazole 400mg 3 times daily for 30 days
  - Surgical treatment= ERCP

Pyogenic liver abscess
- Causative organism--- E. coli (most common), Streptococcus
- Features---- Multiple abscess
- Pathophysiology
  - Ascending infection due to biliary obstruction (ascending cholangitis), or spread from empyema of gall bladder
- Diagnosis
  - US abdomen
  - Alkaline phosphatase raised
- Treatment:
  - Ampicillin + Ciprofloxacin + Metronidazole
  - If penicillin allergic= Ciprofloxacin + clindamycin

Amoebic liver abscess
- Causative organism--- Entamoeba histolytica
- Features--- Single abscess most common in right lobe
- Diagnosis
  - US abdomen
  - Detectable antibodies in 95% of patient
- Treatment:
  - Metronidazole + Diloxanide furoate

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Gastrointestinal

356. An IV drug abuser was lying on road. He has Dupuytren's contracture. BSL was done which comes to be 72mg/dl. His CNS, CVS and Respiratory system examination was normal. He did not awake for the next 24hrs, your diagnosis will be?

a. Herpes encephalitis
b. Hepatic encephalopathy
c. Tuberculous meningitis

Ans: **B**

357. The most important clinical sign of Hirschsprung's disease is:

a. Empty rectum
b. Barium enema shows dilation
c. X-ray abdomen shows dilation
d. Constipation relieves by purgatives
e. Adnominal distention

Ans: **A**

358. Regarding liver transplant

a. Survival after one year is 80%
b. Left lobe is used for transplantation
c. Required immunosuppression is same as for renal transplant
d. Done in child grade B only
e. Only done in acute failure

Ans: **C**

359. 25-year-old presents with recurrent episodes of jaundice, fever and weight loss. On examination, lymph nodes are palpable around umbilical area. What is the next best investigation?

a. Lymph node biopsy
b. Bone marrow biopsy
c. Ct scan abdomen
d. Exploratory laparoscopy

Ans: **A**

360. A 45-year-old male patient who is on feeding tube, what complications can occur by tube feeding?

a. Diarrhea
b. Electrolyte imbalance
c. Clogging of tube

Ans: **C**

361. Which of the following is not a feature of inflammatory bowel disease?

a. Bloating
b. Bleeding
c. Abdominal pain

Ans: **A**

362. Carcinoma of gall bladder is associated with

a. Gallstones
b. Cholangitis
c. Hepatitis C
d. Cholangio carcinoma

Ans: **A**

363. Vincent angina occurs at

a. Gums
b. Teeth
c. Throat

Ans: **A**

364. An 18-year-old girl with lactase deficiency. All are true except:

a. Flatulence
b. Distention
c. Watery diarrhea
d. Abdominal cramping
e. Bleeding PR

Ans: **E**

365. Which of the following causes dose dependent hepatocellular damage?

a. Morphine
b. INH
c. gold
d. Acetaminophen

Ans: **D**

366. A patient presents to you with complain of profuse water diarrhea for last 2 weeks. You see his Fecal analysis report showing stool osmolality of 270 (plasma osmolality 280). Most likely cause of his diarrhea will be?

a. Laxative abuse
b. Tropical sprue
c. Non tropical sprue
d. Villous adenoma

Ans: D

367. Electrolyte abnormality is villous adenoma is?

a. Hypocalcemia
b. Hypokalemia
c. Hyperkalemia
d. Hypomagnesemia
e. Hyponatremia

Ans: **C**

368. A patient presented to emergency department with severe pain in right hypochondrial area and fever, labs showed increased TLC. What will be your next investigation?

a. X-ray abdomen
b. USG abdomen
c. CT abdomen

Ans: **B**

369. Patient with gross ascites, hepatosplenomegaly and absent hepatojugular reflex

a. Budd-Chiari syndrome
b. portal vein thrombosis
c. SVC obstruction.

Ans: **A (Few recalled the option of hepatic vein thrombosis instead of Budd-Chiari syndrome)**

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Chapter: 4 Endocrinology

1. A 45-year-old man presents with bitemporal hemianopia and spade-like hands. What is the definite test to confirm the diagnosis?

a. Early morning growth hormone
b. Insulin tolerance test
c. Oral glucose tolerance test with serial growth hormone measurements
d. Random insulin- like growth factor1 (IGF1)

Ans: C

2. In growth hormone deficiency which one of the following tests is done?

a. GnRH stimulation test
b. Insulin tolerance test
c. Synacthen test
d. Dexamethasone suppression test

Ans: **B**

3. First line of treatment in acromegaly?

a. Anti-growth hormone drugs
b. Transsphenoidal surgery
c. Supportive treatment

Ans: **B**

4. Which one of the following is a screening test for acromegaly?

a. Oral glucose tolerance test with serial growth hormone measurements
b. Random insulin- like growth factor1 (IGF1)
c. Dexamethasone suppression test
d. C-peptide levels

Ans: **B**

5. Gold standard test for diagnosis of acromegaly?

a. Glucose challenge test
b. OGTT with GH measurements
c. Dexamethasone suppression test.
d. Insulin tolerance test

Ans: **B**

6. Which one of the following are the symptoms of acromegaly?

a. Diarrhea
b. Vomiting
c. Double vision
d. Rash

Ans: **C**

7. What is the most common cause of overproduction of growth hormone in acromegaly?

a. Hypothalamic lesion
b. Hyperplasia of pituitary stalk
c. Pituitary lesion
d. Pituitary adenoma

Ans: **D**

Radiant Notes

❖ Hypersecretion of Growth Hormone
- Gigantism
  - Results if adenoma develops before epiphyseal closure.
- Acromegaly
  - Results if adenoma develops after epiphyseal closure.
  - Characterized by overgrowth of the jaws, face, feet and Spade like hands, & generalized enlargement of viscera, along with Hyperglycemia, osteoporosis, and hypertension.
  - Bitemporal hemianopia
  - Treatment:
    - ✓ **Trans-sphenoidal surgery—Frist line treatment**
    - ✓ If not cured, treat with octreotide (somatostatin analog) or pegvisomant (growth hormone receptor antagonist), dopamine agonists (e.g., cabergoline)
- Investigations
  - ✓ IGF-1---screening test and to monitor disease
  - ✓ The definitive test is **Oral glucose tolerance (OGTT)** with serial GH measurements.
  - ✓ A pituitary MRI may demonstrate a pituitary tumour
- **Oral glucose tolerance test with serial GH measurements**
  - in normal patient's GH is suppressed to < 2 mu/L with hyperglycaemia
  - in acromegaly there is no suppression of GH
  - may also demonstrate impaired glucose tolerance which is associated with acromegaly

❖ Hyposecretion of Growth Hormone
- Characterized by short stature
- Investigations:
  - ✓ The diagnosis of GH deficiency often requires dynamic function testing.
  - ✓ The gold standard test is the **insulin tolerance test:**
  - Insulin is given to stimulate significant hypoglycaemia (glucose less than 2.2 mmol/L)
  - This provokes GH and adrenocorticotropic hormone (ACTH) release.
  - Samples are taken at baseline and at 30, 60 and 90 minutes.
  - A normal result is a rise in cortisol to more than 550 nmol/L and a rise in GH to more than 10 μg/L
  - Patients with a history of seizures or heart disease are unsuitable for this test.

Endocrinology

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8. A 30 years old female Patient presented with sign of hypothyroidism, RBS is dec, she has previous history of massive blood transfusion during complicated labour. Probable diagnosis of Sheehan Syndrome was made, which test you will advise her to reach diagnosis?

a. Thyroid function tests
b. Pituitary function test
c. Growth Hormone levels
d. Insulin level

Ans: B

9. Which test is performed to diagnose Sheehan's syndrome?

a. MRI pituitary gland
b. Pituitary function test
c. ACTH stimulation test
d. Growth hormone function test

Ans: B

10. A middle age lady with amenorrhea and all hypothyroid features. She recalls about blood transfused immediately after pregnancy 5 years back, Test to perform?

a. TFT's
b. Pituitary function tests
c. MRI brain

Ans: B

11. A 25-year-old female presents to you in OPD, she complained of loss of hair, loss of libido, amenorrhea. She gives history that 5 year back she bled after delivery and was given blood transfusion, investigation?

a. Pituitary function test
b. CT pituitary
c. MRI pituitary
d. TFTs

Ans: A

12. Sheehan syndrome is caused by

a. Non secreting pituitary adenoma
b. Ablation of pituitary by surgery
c. Ischemic necrosis of anterior pituitary
d. Inflammatory lesion at anterior pituitary
e. Pituitary apoplexy

Ans: C

13. Patient with secondary amenorrhea, soft skin, lethargy, diagnosis?

a. Addison
b. Sheehan syndrome
c. Primary hypothyroidism

Ans: B

14. Lady with loss of blood of about 1500mL, after few days her serum ACTH levels were low and later it was found that her adrenal gland size was reduced to 2g, what is the most likely cause?

a. Atrophy of medulla
b. Atrophy of cortex
c. Ischemic infarction of pituitary gland
d. Pituitary adenoma

Ans: C

15. A female patient with heavy blood loss during child birth, she is at risk of pituitary apoplexy, first thing to do?

a. Blood transfusion
b. IV hydrocortisone
c. Thyroid hormone replacement

Ans: B

Radiant Notes

❖ <u>Hypopituitarism (Under secretion of pituitary hormones)</u>

- Non-secreting pituitary adenoma
- Craniopharyngioma
- Pituitary apoplexy:
  - Sudden enlargement of pituitary tumour secondary to haemorrhage or infarction
  - Characterized by headache, vomiting, neck stiffness
- Postpartum pituitary necrosis (Sheehan syndrome)
  - It is caused by ischemic necrosis of the pituitary gland and is characteristically associated with haemorrhage and shock during childbirth.
  - Clinical manifestations are due at first to loss of gonadotropins, then to subsequent loss of thyroid-stimulating hormone (TSH) and ACTH.
- Empty Sella syndrome
  - Atrophy or compression of pituitary (which lies in the Sella turcica),often idiopathic, common in obese women
- Nelson syndrome
  - Involves the development of large pituitary adenomas following bilateral adrenalectomy
  - Presents with hyperpigmentation, headaches and bitemporal hemianopia.

<u>Dynamic Pituitary Function Tests:</u>

- A dynamic pituitary function test is used to assess patients with suspected primary pituitary dysfunction
- Insulin, TRH and LHRH are given to the patient following which the serum glucose, cortisol, growth hormone, TSH, LH and FSH levels are recorded at regular intervals.
- Prolactin levels are also sometimes measured
- A normal dynamic pituitary function test has the following characteristics:
  - GH level rises > 20mu/l
  - Cortisol level rises > 550 mmol/l
  - TSH level rises by > 2 mu/l from baseline level, LH and FSH should double

In hypopituitarism, hormones should be replaced.
But, give #Hydrocortisone first before providing #Thyroxine. Otherwise, be prepared for the catastrophe of Addisonian Crisis.

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16. A patient with headache, HTN, bilateral adrenal glands removed. patient is having pigmentation. what is diagnosis?

a. Addison's disease
b. Nelson's disease
c. Pheochromocytoma

Ans: B

17. A woman with the history of severe postpartum hemorrhage 3 year back shows atrophy of breasts, secondary amenorrhea, intolerance to cold, loss of appetite, non-pitting edema and bradycardia. She is most likely having:

a. Conn's syndrome
b. Cushing's syndrome
c. Pheochromocytoma
d. Sheehan's syndrome
e. Thyrotoxicosis

Ans: D

18. Intra-partum hemorrhage which one of the following is evident of pituitary infarction?

a. Infrequent urination
b. Diarrhea
c. Easy bruising
d. Constipation
e. Lactation failure

Ans: E

19. 27-year-old women presented with complains if amenorrhea, weight gain and fatigue. Last year she experienced a complicated delivery requiring 2 units of blood transfusion. She was unable to breast fed. On examination she has dry skin and hypotension, Diagnosis?

a. Conn
b. Sheehan syndrome
c. Addison syndrome
d. Nelson Syndrome

Ans: B

20. A patient presents with secondary amenorrhea. One year back she has history of P.P.H for that she received six pints of blood what is most probable cause of her menstrual problem?

a. Pituitary Tumor
b. Sheehan's syndrome
c. Addison's disease
d. Adrenal cortex adenoma
e. Psychological problem

Ans: B

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Endocrinology

21. A patient having previous history of pituitary adenoma, now presents with intracranial bleed, treatment?

a. Bromocriptine
b. Pegvisomant
c. Surgery
d. Radiation

Ans: C

22. Amenorrhea, loss of libido, galactorrhoea and infertility are features of

a. Hyperparathyroidism
b. Cushing syndrome
c. pheochromocytoma
d. Prolactinoma

Ans: D

23. Which of the following is the most common presentation of anterior hyposecretion in a 20-year-old girl?

a. Decreased melanin production
b. Emaciation and cachexia
c. Loss of axillary and pubic hair
d. Amenorrhea

Ans: D

24. 30-year-old male with no co morbid, married for 5 years presents to you in fertility clinic with his semen report showing sperm count of 1000/ml. what next test will you advise?

a. Pituitary MRI
b. Semen fructose level
c. LH+FSH
d. Testosterone
e. Testicular biopsy

Ans: C

25. History pointing toward pituitary adenoma what symptom most commonly a young girl will have

a. Menorrhagia
b. Amenorrhea
c. Anxiety
d. Osteoarthritis

Ans: B

26. A tall man with high bitemporal hemianopia and impotence. What is the most likely cause?

a. Craniopharyngioma
b. Acromegaly
c. Cushing disease
d. Prolactinoma

Ans: D

27. Which one of the following is first line treatment of prolactinoma?

a. Dopamine agonists
b. Trans-sphenoidal surgery
c. Radiation

Ans: A

28. A 25-year female complains of galactorrhoea and secondary amenorrhea. Her serum prolactin is 6000mU/L and bulky pituitary gland on imaging, what is the likely diagnosis?

a. Macro prolactinoma
b. Micro prolactinoma
c. Normal condition
d. Craniopharyngioma

Ans: A

29. A patient having papilledema. Tumor in which region will not cause any focal neurological deficit?

a. Third ventricle
b. Pituitary

Ans: B

Radiant Notes

Source	Hormones
Anterior Pituitary	❖ Growth hormone (GH) ❖ Thyroid stimulating hormone (TSH) ❖ Adrenocorticotropic hormone (ACTH) ❖ Follicle stimulating hormone (FSH) ❖ Luteinizing hormone (LH) ❖ Prolactin
Posterior Pituitary	❖ Antidiuretic hormone (ADH) ❖ Oxytocin

❖ Prolactinoma with hyperprolactinemia-

- Most common pituitary tumor (30% of pituitary tumors).
- **Females**
  - ✓ Prolactinoma in women classically presents as galactorrhoea, amenorrhea, and ↓ bone density due to suppression of oestrogen.
- **Males**
  - ✓ **Prolactinoma in men classically presents as low libido and infertility. (prolactin inhibits FSH & LH)**
- Investigations:
  - Prolactin level: above 2000 mU/L
  - MRI
- Treatment:
  - Dopamine agonists (e.g., bromocriptine)—1st line treatment
  - Trans-sphenoid surgery

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30. A patient after RTA had head injury, develops seizures and now on labs having hyponatremia, what can be the possible cause?
a. Water deprivation
b. Water intoxication
c. SIADH
d. Renal failure

Ans: **C**

31. A patient presents to you in ER with right sided weakness. His labs show Na 108mg/dL. what is the most likely diagnosis?
a. Renal failure
b. SIADH
c. Cushing syndrome
d. Addison's disease

Ans: **B**

32. A middle-aged man underwent open laparotomy due to bowel perforation and after 5 days developed confusion nausea and vomiting, labs showed serum Na 118 what is the most likely cause of hyponatremia?
a. Water intoxication
b. SIADH
c. Diabetic insipidus

Ans: **A**

- ✓ SIADH can occur in first 24-48 hours post-operatively
- ✓ But still the most common cause of post-operative hyponatremia esp. bowel surgery is water intoxication due to excess hypotonic fluids infusion

33. A patient presented with seizures in emergency department 5 days after abdominal surgery. Investigation showed Serum Na 115. What is the diagnosis?
a. SIADH
b. Diabetes insipidus
c. Water intoxication
d. Psychogenic polydipsia

Ans: **A**

34. Patient with right sided weakness has Na:118. What is the likely diagnosis?
a. SIADH
b. Cushing's syndrome
c. Renal failure
d. Addison's disease

Ans: **A**

35. A patient with features of SIADH, appropriate to diagnosis?
a. Urinary Na >8mmol/L
b. Urinary K >3.5 mEq/L
c. Urinary osmolality >100 mOsm/Kg
d. Urinary specific gravity 1005

Ans: **C**

Radiant Notes

- **SIADH**
  - Normally: ADH is released at a plasma osmolality > 280 mOsm/kg: this is called the osmotic
  - threshold
  - SIADH is most commonly caused by ectopic production of ADH by various tumors, especially **small cell carcinoma of the lung.**
  - **Other causes include stroke, head injury and drugs**
  - Clinical features:
    - ✓ Excessive free water retention leading to Hyponatremia--- Very low serum Na+ levels can lead to cerebral edema, seizures
    - ✓ Urine osmolality > serum osmolality
    - ✓ Inability to dilute the urine, Cerebral edema, Neurologic dysfunction
  - Diagnosis Clue:
    - **Euvolemic patient with low serum osmolality (<280 mOsm/kg) with high urine osmolality (>100 mOsm/kg).**
  - Treatment:
    - Correction of hyponatremia must be done slowly to prevent osmotic demyelination syndrome (formerly known as central pontine myelinolysis).
    - Fluid restriction
    - Democlocycline (reduces the responsiveness of the collecting tubule cells to ADH

Comparison

Disorder	Serum Na+	Serum Osmolality	Urine Osmolality
Dehydration	Inc	Inc	Inc
DI	Inc	Inc	Dec
SIADH	Dec	Dec	Inc

Endocrinology

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Endocrinology

36. A 55-year-old diabetic male is on treatment for manic depressive illness. Previously he had lung carcinoma for which lung resection was done. Now he presented with complaint of polyuria, nocturia and intense thirst. serum Na 142, BSR is 180 mg/dL & urine osmolality of 150 mOsm/kg. What is the most probable cause of his symptoms?

a. SIADH
b. Diabetes insipidus
c. Hypercalcemia
d. Renal glycosuria
e. Psychogenic polydipsia

Ans: **B**

37. A patient comes to you in OPD. Already diagnosed case of cranial diabetes insipidus and is on desmopressin. what is the possible complication of desmopressin?

a. vWD
b. Enuresis
c. Water intoxication
d. Hyponatremia

Ans: **D**

38. A young male presented in OPD with complain of weakness and increased frequency & volume of urination. BSR was done which came normal. What will you do next?

a. Water intoxication test
b. Water deprivation test
c. Urine osmolarity
d. MRI

Ans: **B**

39. A patient is passing 4 to 8 litres of urine. Urine osmolarity 265. After water deprivation it increased to 700. After DDAVP it increased to 1000, Dx?

a. Psychogenic polydipsia
b. Nephrogenic diabetes insipidus
c. Cranial Diabetes insipidus
d. SIADH

Ans: **A**

40. Which one of the following is not a cause of central Diabetes Insipidus?

a. Pituitary tumor
b. Craniopharyngioma
c. Head trauma
d. Lithium

Ans: **D**

41. Patient have Polyuria and polydipsia presented in hospital, water deprivation test was done patient was given desmopressin and 60% result was positive after 2 hours. Receptor on which desmopressin acted?

a. D1 receptor
b. D2 receptor
c. V1 receptor
d. V2 receptor

Ans: **D**

42. A diabetic patient was given some antibiotic for his foot ulcer and later on he developed polydipsia and polyurea despite tight glycaemic control, drug responsible

a. Ofloxacin
b. Piperacillin
c. Nafcillin.
d. Methicillin

Ans: **A**

Radiant Notes

Diabetes Insipidus

- Lack of ADH (central) or failure of response to circulating ADH (nephrogenic).
- Clinical features:
  - Polyuria, intense thirst, inability to concentrate urine (dilute urine)
- Classification

Types	Central DI	Nephrogenic DI
Findings	❖ Lack of ADH	❖ Unresponsiveness of collecting tubules to ADH
Causes	❖ Pituitary tumor ❖ Head trauma, ❖ Inflammation or tumors of hypothalamus	❖ Genetic ❖ Electrolytes: ↑ Ca++, ↓ K+ ❖ Drugs: lithium, demeclocycline (ADH antagonist)
Treatment	❖ **Desmopressin acetate** ❖ Hydration	❖ Any underlying cause such as high blood calcium must be corrected

- Diagnosis:
  - **High plasma osmolality (<305 mOsm/kg) with low urine osmolality**
  - **Water deprivation test:**
    - ✓ Stage-1: (water deprivation for 0-8 hours):
      - If after 8 hours, urine concentrates → primary polydipsia
      - If after 8 hours, urine does not concentrate→ DI (either CDI, NDI)
    - ✓ Stage-2 (give desmopressin 2 ug IM)
      - If urine concentrates (>600) after desmopressin → CDI
      - If urine does not concentrate (<300) after desmopressin → NDI

	Starting plasma osm	Final urine osm.	Urine osm. post-DDAVP
Normal	Normal	> 600	> 600
Psychogenic polydipsia	Low	> 400	> 400
Cranial DI	High	< 300	> 600
Nephrogenic DI	High	< 300	< 300

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43. **A 50-year-old housewife complains of weight gain, fatigue, deepening of her voice, dry skin, constipation, and cold intolerance, diagnosis**
   a. Hyperthyroidism
   b. Hypothyroidism
   c. Hyperparathyroidism
   d. Hypoparathyroidism
   e. Cushing syndrome

Ans: **B**

44. **A female with mood swings (Irritable), weakness, and palpitations, she also experienced excessive sweating, diagnosis**
   a. Hypothyroidism
   b. Hyperthyroidism
   c. Addison
   d. Pheochromocytoma

Ans: **B**

45. **A female complains of weight gain, fatigue, cold intolerance & constipation, Diagnosis?**
   a. Hyperthyroidism
   b. Hypothyroidism
   c. Diabetes mellitus
   d. Addison disease

Ans: **B**

46. **Female patient presented with complaint of weight loss palpitations sweating and diarrhoea. On examination you find out BP is normal. Probably diagnosis is**
   a. Addison disease
   b. Cushing
   c. Hyperthyroid
   d. Hypothyroid

Ans: **C**

47. **Obese woman, who's always cold, gaining weight. What investigation should be done next**
   a. TSH
   b. T3
   c. T4
   d. Blood sugar level

Ans: **A**

48. **A female complains of weight gain, fatigue, palpitations, cold intolerance, menorrhagia & constipation. Investigation for diagnosis is**
   a. LH & FSH
   b. TSH
   c. T3
   d. Serum cortisol

Ans: **B**

49. **14-year girl mental retardation & slow response of reflexes?**
   a. Hypothyroidism
   b. Hyperthyroidism

Ans: **A**

50. **A patient started on carbimazole for thyroid disease, developed agranulocytosis, feature of agranulocytosis is?**
   a. Chest infection
   b. Fever
   c. Chest infection
   d. Sore throat

Ans: **C**

Radiant Notes

❖ **Hyperthyroidism vs hypothyroidism**

	Hyperthyroidism	Hypothyroidism
General	Weight loss despite ↑ appetite Heat intolerance	Weight gain despite ↓ appetite **Cold intolerance**
Skin	Sweaty Pretibial myxedema	**Dry skin (Most common)** Dry hairs Alopecia
Heart	Systolic hypertension Tachycardia	Diastolic hypertension Bradycardia
Neurological	Anxiety Hyper-reflexia Irritability Tremors	**Carpal tunnel syndrome** **Delayed relaxation of reflexes**
Reproductive	Oligomenorrhea, infertility	Menorrhagia, Infertility
GIT	Diarrhea	Constipation
Eye	Exophthalmos (graves' disease)	
Labs	↑ T3 and T4 ↓TSH	↓T3 and T4 ↑TSH
Causes	❖ Graves' disease ❖ Toxic nodular goitre ❖ Toxic adenoma ❖ Subacute (De Quervain's) thyroiditis ❖ Post-partum thyroiditis ❖ Amiodarone therapy	❖ **Primary atrophic hypothyroidism:** ❖ Hashimoto's thyroiditis ❖ After thyroidectomy or radioiodine treatment ❖ **Drug therapy** (e.g. lithium, amiodarone or anti-thyroid drugs such as carbimazole) ❖ **Dietary iodine deficiency**
Treatment	❖ Carbimazole (SE: Agranulocytosis) ❖ Propylthiouracil, radioiodine and surgery	❖ Levothyroxine (Side effect atrial fibrillation)

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Endocrinology

51. Features of carpel tunnel syndrome + sleepiness
- a. Hyperthyroidism
- b. Hypothyroidism

Ans: B

52. Female hypothyroid, baby born would need
- a. Mechanical ventilation
- b. Antibiotics
- c. Hydration

Ans: A

53. Most common skin manifestation of hypothyroidism is:
- a. Myxoedema
- b. Vitiligo
- c. Alopecia
- d. Dry skin

Ans: D

54. Hyperfunctioning Thyroid causes all except
- a. Increased temperature
- b. Atrial fibrillation
- c. Tachycardia
- d. Hypertension
- e. Increased vascular resistance

Ans: E

55. Which one of the following is a feature of hypothyroidism?
- a. Palmar erythema
- b. Eruptive xanthoma
- c. Acanthosis nigricans
- d. Alopecia
- e. Dupuytren's contracture

Ans: D

56. The most prominent feature of thyroid hyperfunction is?
- a. Sweating
- b. Tachycardia
- c. Tremor

Ans: B

57. What is common in hyperthyroid, diabetes mellitus type 1 and anorexia nervosa
- a. Weight loss
- b. Weight gain
- c. Sweating.
- d. Diarrhea

Ans: A

58. What will you find in patient with primary hypothyroidism due to intrinsic disease of thyroid?
- a. Increase thyroglobulin
- b. Increase cholesterol
- c. Increase iodide
- d. Increase thyroxine

Ans: B

59. A 35-year-old female complains of difficulty in standing from sitting position. Her serum cholesterol is 306mg/dL. What is the likely diagnosis?
- a. Hypothyroidism
- b. Cushing's syndrome
- c. Polymyositis
- d. Ovarian carcinoma

Ans: A

60. A 35-year-old female patient presents with lethargy. Weight gain and raised total cholesterol level. What is the diagnosis?
- a. Pregnancy
- b. Hypothyroidism
- c. Diabetes mellitus

Ans: B

61. A patient who is suffering from carcinoma underwent radiotherapy, now he is complaining of weight gain, alopecia & hair loss. Investigation to find out the cause?
- a. Thyroid profile
- b. Tumor markers
- c. CT scan

Ans: A

62. Common feature between hypothyroidism and hyperthyroidism is
- a. Myxoedema
- b. Tachycardia
- c. Onycholysis
- d. Ankle jerk
- e. Exophthalmos

Ans: A (If option of pruritis is present prefer that)

63. Differentiating point between graves' disease and toxic multinodular goitre
- a. Myopathy
- b. Cardiomyopathy
- c. Onycholysis
- d. Tachycardia
- e. Tremors

Ans: C

64. A patient with complain of weight gain, cold intolerance and rubbery skin, TFT's would be:
- a. Inc TSH, Dec T4, Dec T3
- b. Dec TSH, Dec T4, Dec T3
- c. Inc TSH, Inc T4, Dec T3
- d. Inc TSH, Normal T4, Normal T3

Ans: A

65. Monitoring of drug compliance in hypothyroidism
- a. TSH
- b. Free T 4
- c. Free T3

Ans: A

66. Hx of lymphoma + radiations, now weight gain and dry skin, what to check
- a. TSH
- b. T3, T4
- c. Antibodies

Ans: A

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67. 30-year-old female is started on anti-thyroid drug for Grave's disease. How to check for response of the treatment?

a. Total T4
b. TSH
c. Free T 4
d. Free T3

Ans: **B**

68. Investigation of choice for a hypothyroid patient will be:

a. T3
b. T4
c. TSH

Ans: **C**

69. In hypothyroidism, which biochemical test is most useful in the diagnosis and monitoring of treatment?

a. Thyroglobulin
b. FT4
c. FT3
d. TSH
e. Thyroid auto antibodies

Ans: **D**

70. A patient having decrease T4, normal TSH, normal Na and K, Inc cholesterol

a. Hypothyroidism
b. Hyperthyroidism
c. Thyrotoxicosis

Ans: **A**

71. Old female tremors, palpitation what to check.

a. T3
b. T4
c. TSH

Ans: **C**

72. Patient started on thyroxine treatment, which investigation should be done for assessment?

a. TSH after 6 weeks
b. TSH after 3 weeks
c. TSH weekly

Ans: **A**

73. Hypothyroid patient started on thyroxin; she should repeat TSH again after

a. 6 weeks
b. 3 Weeks
c. 6 months

Ans: **A**

74. Best test to perform for diagnosis and monitoring of treatment?

a. FT3
b. FT4
c. TSH
d. Thyroid auto antibodies

Ans: **C**

75. A patient with tachycardia, weight loss and irritable presents to you in OPD. His lab finding will show

a. High T4, High T3, low TSH
b. High T4, low T3, high TSH
c. Low T3, Low T4, High TSH
d. Low T3, Low T4, Low TSH

Ans: **A**

76. A patient presented with the following labs TSH decreased, while T3 and T4 normal Diagnosis?

a. Hypothyroidism
b. Hyperthyroidism
c. Subclinical Hypothyroidism
d. Euthyroid
e. Subclinical Hyperthyroidism

Ans: **E**

77. ICU patient with Low T3, Low T4 and low TSH

a. Hyperthyroidism
b. Subclinical Hypothyroidism
c. Sick Euthyroid
d. Subclinical Hyperthyroidism

Ans: **C**

78. Thymomas is mostly associated with?

a. AML
b. Red cell aplasia
c. Myelodysplasia
d. Thrombocytopenia

Ans: **B**

Radiant Notes

❖ Thyroid labs findings

Diseases	TSH	T3, T4
Hypothyroidism	↑	↓
Hyperthyroidism	↓	↑
Subclinical hypothyroidism	High	Normal
Subclinical hyperthyroidism	Low	Normal
Sick euthyroid syndrome	↓	↓
Poor compliance	High	Normal

❖ Remember
- TSH (Most sensitive test)
- Thyroxine Half-life is ~7d, so wait ~4wks before checking TSH to see if a dose change is right---ideally 6 weeks (oxford medicine) while in MRCP pass medicine 8-12 weeks mentioned

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Endocrinology

79. A young lady presented in OPD with concern of her nails separating from their nail bed. On examination she had tachycardia, tremors and bulging eyes. Labs showed T4
80. increased, TSH low. what is your diagnosis?

a. Bilateral orbital tumor.
b. Hashimoto thyroiditis
c. Sick euthyroid syndrome
d. Grave's disease

Ans: **D**

81. Young female with weight loss, palpitations pretibial myxoedema and exophthalmos

a. Grave's disease
b. Multinodular goiter
c. Hashimoto
d. Subacute thyroiditis

Ans: **A**

82. What is most common cause of thyroiditis?

a. Riedel thyroiditis
b. Bacterial thyroiditis
c. Post-partum thyroiditis
d. Hashimoto thyroiditis
e. Subacute thyroiditis

Ans: **D**

83. Symptoms such as very high body temperature, rapid heartbeat, and shortness of breath describe:

a. Thyroid storm
b. Thyroid crisis
c. Thyroid failure

Ans: **A**

84. A patient after sickness presented with thyroid profile. Thyroid hormones were initially up and then down with tender thyroid gland, diagnosis?

a. De Quervain's thyroiditis
b. Hashimotos thyroiditis
c. Thyrotoxicosis
d. Thyroid storm

Ans: **A**

85. A 40-year known Hypothyroidism female was referred to endocrinologist for a mass in neck. FNAC shows increased lymphocytes and serology was advised. What is the most probable cause?

a. Follicular adenoma
b. Thyroid carcinoma
c. Colloid goitre
d. Hashimotos thyroiditis

Ans: **D**

86. A young woman with goiter, cold intolerance, weight gain diagnosed as Hashimoto thyroiditis, confirmatory test is

a. TSH
b. T3, T4, TSH
c. Antimicrosomal n antithyroglobulin antibodies

Ans: **C**

87. Diffuse goitre associated with HLA-DR5

a. Hashimotos thyroiditis
b. thyroid nodule
c. thyroid carcinoma
d. Graves' disease

Ans: **A**

Radiant Notes

Graves' disease

- **Most common cause of hyperthyroidism**
- Besides all other clinical signs and symptoms of hyperthyroidism there is Pretibial myxedema (infiltrative dermopathy) and **Exophthalmos** (30% of patients) **thyroid acropachy** (subperiosteal new bone formation, manifested as clubbing (aka Marie's Disease).

Autoantibodies:

- Anti-TSH receptor stimulating antibodies (90%)
- Anti-thyroid peroxidase antibodies (50%)

Thyroid storm

- Life-threatening condition, associated with untreated or undertreated hyperthyroidism and significantly worsens in the setting of acute stress such as infection, trauma, and surgery
- Presents with tachycardia (>140 bpm), agitation, restlessness, fever, diarrhea, coma, and tachyarrhythmia (cause of death).
- Treatments (4 P's)
  - β-blockers (e.g., Propranolol), Propylthiouracil, Prednisolone, Potassium iodide (Lugol iodine)

Subacute (De Quervain's) thyroiditis

- Thought to occur following viral infection and
- Typically presents with hyperthyroidism
- Painful goitre
- Self-limiting
- Steroids and propranolol
- **Globally reduced uptake on iodine-131 scan**
- Carbimazole and PTU are ineffective (As inc hormones are due to destruction not due to inc production)

Hypothyroidism

- Hyperthyroidism with surgery, irradiation, or drugs, which is a common cause of myxoedema in the United States

Hashimoto Thyroiditis

- Autoimmune disorder of the thyroid gland.
- Chronic lymphocytic thyroiditis
- It is 10 times more common in women
- **Most common cause** of hypothyroidism in iodine-sufficient regions.
- Simple clue
  - **Hypothyroidism + goitre + anti-TPO antibodies (Also anti-Thyroglobulin antibodies, anti-microsomal antibodies)**

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88. 26-year-old girl presented with palpitation and sweating, radio isotope scan showed reduced uptake, diagnosis?
    a. De Quervain's thyroiditis
    b. Grave's disease
    c. Toxic nodular goiter
    d. Papillary Carcinoma

Ans: A

89. Scenario of Graves' disease asked Most specific for Graves' disease?
    a. TSH
    b. Antithyroglobulin antibodies
    c. Anti-TSH receptor stimulating antibodies
    d. Anti-thyroid peroxidase antibodies

Ans: C

90. Middle age female underwent radiotherapy for thyrotoxicosis. Which one of the following is the most likely adverse effect?
    a. Hypothyroidism
    b. Agranulocytosis
    c. Oesophagitis
    d. Precipitation of thyroid eye disease

Ans: A

91. A young girl presents with hyperthyroidism. What is the treatment of choice?
    a. Antithyroid drugs
    b. Radioiodine therapy
    c. Surgery
    d. Beta blockers

Ans: A

92. A 70-year-old female presented with thyrotoxicosis having multinodular goiter, best treatment option for her will be?
    a. Radioactive iodine
    b. Anti-thyroid Drugs
    c. Surgery

Ans: A

93. A young female patient presented in OPD with features of Graves' disease. What is the best initial treatment for her?
    a. Propranolol
    b. Anti-thyroid drugs
    c. Radioactive iodine
    d. Surgery

Ans: B

94. 70-year-old male presented with features of hyperthyroidism, different values of TFT's given, Definitive treatment?
    a. Propranolol
    b. Anti-thyroid drugs
    c. Radioactive iodine
    d. Surgery

Ans: C

Radiant Notes

Disease	Treatment of choice
Graves' disease	❖ **Anti-thyroid drugs** o First episode in patients < 40 yrs. ❖ **Radioiodine treatment** o Patients > 40 years o Recurrence following surgery irrespective of age o Contraindications include ▪ Pregnancy ▪ Age < 16 years. ▪ Thyroid eye disease is a relative contraindication, as it may worsen the condition ❖ **Surgery** o The surgical procedure of choice for patients with Graves' disease is a **total resection of one lobe and a subtotal resection** of the other lobe, leaving about 4 g of thyroid tissue
Thyroid eye disease	❖ **Stop smoking** ❖ Lubricants, steroid, surgery
Toxic Multinodular Goiter	❖ Radioiodine therapy.
Subacute (De Quervain's) thyroiditis	❖ For pain----aspirin or other NSAIDs ❖ Propranolol for transient symptoms of ❖ hyperthyroidism. ❖ in more severe cases --- steroids
Thyroid Storm	❖ **Mnemonic:** 4 P's) ❖ β-blockers (e.g., Propranolol), Propylthiouracil, Prednisolone, Potassium iodide (Lugol iodine)
Hashimoto's thyroiditis	❖ Levothyroxine 50-100 mcg ❖ And for patients with cardiac disease, or age >50 years -- 25mcg od with dose slowly titrated.
Thyrotoxicosis In pregnancy	❖ PTU used in first trimester of pregnancy (due to methimazole teratogenicity) ❖ Methimazole/Carbimazole used in second and third trimesters of pregnancy (due to risk of PTU-induced hepatotoxicity).
Post-partum thyroiditis	❖ The thyrotoxic phase is not usually treated with antithyroid drugs as the thyroid is not overactive. ❖ Propranolol is typically used for symptom control ❖ The hypothyroid phase is usually treated with thyroxine

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95. A young female develops eye pain and reduced visual acuity after starting treatment for Graves' disease, reason for her symptoms?

a. Radioiodine treatment
b. Thyroidectomy
c. Propylthiouracil
d. Carbimazole

Ans: **A**

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96. Female with Graves disease, best possible way for reducing eye disease?

a. Reduce alcohol intake
b. Regular exercise
c. Vitamin A
d. Stop smoking

Ans: **C**

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97. An old male with hyperthyroidism. best treatment for him?

a. Surgery
b. Radioactive iodine
c. Antithyroid drugs
d. Beta blocker

Ans: **D**

---

98. A female patient presented in OPD with features of hyperthyroidism. On examination she is noted to nave a goitre containing multiple irregular nodules. Treatment of choice in such patient?

a. Antithyroid drug
b. Surgery
c. Carbimazole
d. Radioactive iodine

Ans: **B**

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99. An asymptomatic female has 3 cm nodule in thyroid gland. She is euthyroid (Normal TFTs). What is the investigation of choice?

a. Radioiodine uptake
b. FNAC
c. CT scan of neck
d. Thyroid antibodies

Ans: **B**

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100. A pregnant female developed features of hyperthyroidism in first trimester, treatment?

a. Carbimazole
b. Propylthiouracil
c. Radioactive iodine
d. Surgery

Ans: **B**

---

101. A pregnant female in her 3rd Trimester diagnosed with hyperthyroidism, treatment?

a. PTU
b. Carbimazole
c. Radioactive iodine
d. Beta blockers

Ans: **B**

---

102. 8 weeks post-delivery hyperthyroid, what to give?

a. Beta blockers
b. Propylthiouracil
c. Radioactive iodine

Ans: **A**

---

103. Hyperthyroidism features plus reduced Radioactive iodine uptake – next management step

a. Aspirin/NSAIDS
b. Carbimazole
c. Surgery
d. Steroids

Ans: **A**

---

104. Multinodular goitre with hyperthyroid features. Which is definitive treatment?

a. Radioactive iodine
b. Anti-thyroid drugs
c. Surgery

Ans: **A**

---

105. A patient developed thyroid nodule. Biopsy showed follicular sheets. Treatment?

a. Subtotal thyroidectomy
b. Total thyroidectomy
c. Antithyroid drugs
d. Radioactive iodine

Ans: **B**

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106. Patient on amiodarone, T3, T4 raised, next step in management include?

a. Stop amiodarone
b. Steroids
c. Betablockers

Ans: **A**

---

107. A patient presented in emergency with decreased consciousness and profound hypothermia, previously he was taking treatment for hypothyroidism, what to give before the labs arrived?

a. IV dextrose
b. IV thiamine
c. IV T3
d. IV hydrocortisone

Ans: **D**

---

108. A 36-year-old lady has thyroid nodule which was later found to be thyroglossal cyst. which of the following is most likely complication demanding removal of this?

a. Thyroid storm
b. Fistula
c. Adenoma
d. Carcinoma
e. Hypoparathyroidism

Ans: **B**

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109. 40 years old female patient presented with Bilateral exophthalmos with ecchymosis diagnosis?

a. Grave's disease
b. Orbital cellulitis
c. Subacute thyroiditis

Ans: **A**

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110. 35-year-old female patient presented in emergency department with bilateral exophthalmos, chemosis, periorbital edema, labs were ordered and T4 and TSH came normal, diagnosis?

a. Sick euthyroid
b. Thyrotoxicosis factitial
c. Hashimoto
d. Graves
e. Tumor

Ans: **D**

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111. A diagnosed case of myasthenia gravis patient presents with a mediastinal mass. What do you think?

a. Thymoma
b. Pancoast tumor
c. Bronchogenic carcinoma

Ans: **A**

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112. Most common presentation of mediastinal tumor

a. Pressure effects
b. Hormonal effect
c. Direct extension as malignancy

Ans: **A**

---

113. Thymomas is mostly associated with?

a. AML
b. Red cell aplasia
c. Myelodysplasia
d. Thrombocytopenia

Ans: **B**

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114. Which one of the following is the most common tumor of anterior mediastinum?

a. Metastatic tumor
b. Melanoma
c. lymphoma
d. Thymoma

Ans: **D**

---

115. Which one of the following is the most common tumor of posterior mediastinum?

a. Neurofibroma
b. Lymphoma
c. Dermoid
d. Metastatic carcinoma

Ans: **A**

Radiant Notes

Thymoma

- Thymomas are the most common tumour of the anterior mediastinum
- Usually detected between the sixth and seventh decades of life.
- Associated with:
    - **Myasthenia gravis** (30-40% of patients with thymoma)
    - **Red cell aplasia**
    - Dermatomyositis, Also: SLE, SIADH
- Causes of death:
    - **Airway compression & Cardiac tamponade**

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Endocrinology

116. A young patient presents in OPD with cataract, CT brain shows basal ganglia calcification. your diagnosis will be.
   a. Hypothyroidism
   b. Hypoparathyroidism
   c. Hyperparathyroidism

Ans: B

117. 50 years old female, psychiatric Patient, having cataract, decrease calcium & Inc PO4, cause?
   a. Galactosemia
   b. Hypoparathyroidism
   c. Hyperparathyroidism
   d. Hyperthyroidism
   e. Hypothyroidism

Ans: B

118. A Patient with cataract referred from psychiatric department having low Serum Ca++ , what is most likely Dx?
   a. Hyperthyroidism
   b. Hypothyroidism
   c. Hypoparathyroidism
   d. Hyperparathyroidism

Ans: C

119. Mother brought her child in OPD, Child has short stature, underweight, having short 4th metacarpal. Investigation showed decrease calcium, what will be your diagnosis?
   a. Malnutrition
   b. Malabsorption
   c. Rickets
   d. Pseudohypoparathyroidism

Ans: D

120. A patient underwent thyroid surgery, Post thyroidectomy he developed tingling and twitching. What next best management step should be taken?
   a. Re-exposure
   b. Thyroid function test
   c. Check ionized calcium

Ans: C

121. A patient after thyroid surgery presented with complains of tingling and numbness in her mouth, reason for her symptom?
   a. Local bleed and pressure at larynx
   b. Hypoparathyroidism
   c. Recurrent laryngeal nerve damage

Ans: B

122. During thyroid surgery posterior part of thyroid gland is spared to save
   a. Parathyroid gland
   b. Recurrent laryngeal nerve
   c. Thymus
   d. Aorta

Ans: A

123. Which one of the following is not a feature of pseudohypoparathyroidism?
   a. Low calcium levels
   b. Low PTH levels
   c. Short stature
   d. Short 4th metacarpal

Ans: B

Radiant Notes

Hypoparathyroidism

- It refers to ↓ PTH secretion → resulting in hypocalcemia
- Causes:
- Accidental surgical excision during thyroidectomy (most common)
- DiGeorge Syndrome (congenital Thymic hypoplasia)
- Manifestation:
- Tetany (intermittent muscular spasms)
- Chvostek sign → tapping of facial nerve causes contraction of facial muscles
- Trousseau sign → occlusion of brachial artery with BP cuff causes carpal spasm,
- low calcium, high phosphate, **low PTH**
- **Basal ganglia calcifications**
- Prolonged QT
- Cataracts

Pseudohypoparathyroidism

- Also known as Albright hereditary osteodystrophy
- Autosomal dominant condition in which PTH production is normal, but the kidneys are unresponsive to PTH (end-organ resistance to PTH)
- Manifestation
- Short stature
- Short 4th and 5th metacarpals and metatarsals
- **Calcification of basal ganglia**
- low calcium, high phosphate, **High PTH**

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124. 45-year-old female complains of bone pain. She has history of recurrent stones. On lab investigation, there is raised calcium. What is the diagnosis?

a. Multiple myeloma
b. Sarcoidosis
c. Hyperparathyroidism
d. Renal tubular acidosis type 1

Ans: C

---

125. If a Patient has high serum calcium and decreased PTH, what will u suspect

a. Chronic kidney disease
b. Pseudohypoparathyroidism
c. Secondary hypoparathyroidism
d. Malignancy

Ans: D

---

126. A patient presented with labs showing increased calcium and decreased phosphate, diagnosis?

a. Primary Hyperparathyroidism
b. Secondary Hyperparathyroidism
c. Tertiary Hyperparathyroidism
d. Multiple myeloma

Ans: A

---

127. A patient who is asymptomatic came for routine check-up, on investigation his labs showed calcium 12, phosphate 2.3, possible diagnosis?

a. Hyperparathyroidism
b. Hypoparathyroidism
c. Multiple myeloma
d. Chronic kidney disease

Ans: A

---

128. A 50-year-old male presents with fatigue, labs show increased PO4, reduced calcium and increased urate levels. What is the diagnosis?

a. Osteomalacia
b. Paget's disease
c. Hypoparathyroidism
d. Chronic kidney disease

Ans: D

---

129. Metastatic calcification in kidney is caused by?

a. Hyperparathyroidism
b. Hypoparathyroidism
c. Sarcoidosis

Ans: A

---

130. A girl with recurrent abdominal pain & muscular cramps, Investigation showed serum Ca++ 6mg/dL, phosphate 10mg/dL, ALP raised while decreased 1,25 D OH, Diagnosis?

a. Hypoparathyroidism
b. Hyperparathyroidism
c. Pseudo hypoparathyroidism
d. Hypophosphatasia

Ans: B

---

131. A 20-year-old CKD patient on Hemodialysis, presents to you with pain in hands. on examination joints are normal with no inflammation or tenderness. Investigations were ordered which showed Dec Ca, Inc PO4 & Inc and PTH, Diagnosis?

a. Primary hyperparathyroidism
b. Secondary hyperparathyroidism
c. Gout
d. Pseudogout
e. Paget disease

Ans: B

---

132. A 70-year-old female asymptomatic with incidental finding of hypercalcemia, what is most likely cause of her hypercalcemia?

a. Multiple myeloma
b. Parathyroid adenoma
c. Hyperthyroidism

Ans: B

Radiant Notes

Hyper Parathyroidism

Mnemonic for primary hyperparathyroidism: **painful bones, renal stones, abdominal groans and psychic moans**

- Painful bones: fractures, osteoporosis, Osteitis fibrosa cystica
- Renal stones due to ↑ Ca++
- Abdominal groans → constipation due to ↑ Ca++
- Psychic moans→ depression, seizures

Disorder	Serum Ca2+	PO_4^{3-}	ALP	PTH
Osteoporosis	—	—	—	—
Osteopetrosis	—/↓	—	—	—
Paget disease of bone	—	—	↑	—
Primary hyperparathyroidism	↑	↓	↑	↑
Secondary hyperparathyroidism/ CRF/Vit D deficiency	↓	↑		↑
Tertiary hyperparathyroidism	↑	↑		↑
Osteomalacia/Rickets	↓	↓	↑	↑

- **Hypercalcemia with elevated PTH levels**
  - Primary or tertiary hyperparathyroidism
  - Lithium-induced hyperparathyroidism

- **Hypercalcemia with low PTH levels**
  - Malignancy
  - Sarcoidosis, HIV
  - Thyrotoxicosis
  - Thiazide diuretics
  - Glucocorticoid deficiency

Endocrinology

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Endocrinology

133. Psychiatric patient with increased fatigue, investigation showed calcium 13mg/dL, low Phosphate levels, and increased PTH, which one of the following is most likely?

a. Osteolytic lesions
b. Osteopetrosis
c. Osteitis fibrosa cystica
d. Paget disease

Ans: **C**

134. Which of the following has same effect on calcium and phosphorus metabolism?

a. Vitamin D
b. PTH
c. Calcitonin
d. Magnesium

Ans:

135. A young patient presented with low calcium. Next investigation?

a. Vit D
b. PTH
c. Calcitonin

Ans:

136. Patient with bulging chest, labs showed decreased Ca, Decreased PO4 & Inc PTH

a. Vitamin D deficiency
b. Hypothyroidism
c. Hyperparathyroidism
d. Hypoparathyroidism

Ans: A

137. A scenario of old man with increased fatigue and high Ca++, what to do next?

a. X-ray
b. Vit D level
c. PTH levels

Ans:

138. Regarding vit D deficiency, which one is correct?

a. High Ca, low vit D, high PO4, low PTH
b. Low Ca, low vit D, normal PO4
c. Low Ca, low Vit D, low PO4, high PTH

Ans: **C**

139. Levels of Ca and Phosphate are mainly regulated by

a. Kidneys
b. Thyroid hormone
c. Parathyroid hormone

Ans: **C**

140. The patient suffering from which of the following disease don't have hyponatremia?

a. Addison disease.
b. Hypothyroidism
c. Hyperthyroidism.
d. SIADH.

Ans: **C**

Radiant Notes

PTH **Mnemonic:** **(PTH)** → Phosphate Trashing Hormone	❖ ↑ Serum Ca^{2+}, ↓ PO4.
Vitamin D	❖ ↑ Serum Ca^{2+}, ↑PO4.
Calcitonin	❖ ↓ Serum Ca^{2+} ❖ Calcitonin opposes actions of PTH. ❖ Secreted by Parafollicular cells of thyroid. ❖ Can be used to treat hypercalcemia

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141. **Most common cause of Cushing's syndrome in 67-year-old male is:**
a. Pituitary adenoma
b. Adrenal adenoma
c. Ectopic ACTH
d. Iatrogenic (Steroids use)
Ans: **D**

142. **Most common cause of Cushing disease:**
a. Hypopituitarism
b. Adrenal adenoma
c. Pituitary adenoma
d. Ectopic ACTH
Ans: C

143. **A 16-year-old female presents with hypertension and increasing weight. Which of the following features would be most suggestive of Cushing's syndrome rather than simple obesity?**
a. Abdominal striae
b. Acanthosis nigricans
c. Moon face
d. Amenorrhea
Ans: **A**

144. **A middle age obese hypertensive female Which factor differentiate Cushing from obesity?**
a. Acanthosis nigricans
b. Buffalo hump (interscapular fat pad)
c. Pot belly
d. Proximal myopathy
Ans: **D** (If u have to choose between abdominal striae and proximal myopathy prefer proximal myopathy)

145. **A lady presents with round face, fat on neck and abdomen, hirsutism and raised ACTH. Diagnosis**
a. Addison disease
b. Cushing disease
c. Cushing syndrome
d. Polycystic ovarian syndrome
Ans: **B**

146. **In Cushing disease which one of the following abnormalities is seen**
a. Hypokalemia
b. Decreased ACTH
c. Decreased Cortisol
d. Hypoglycemia
Ans: **A**

147. **A diagnosed case of Cushing presented to ER and requires immediate surgery. Which of the following should be corrected before surgery?**
a. Moon face
b. Hyperglycemia
c. Buffalo hump
d. Hirsutism
Ans: **B**

Radiant Notes

Endocrinology

Cushing Syndrome

Causes	❖ Exogenous: ○ **Exogenous corticosteroid medication (most common)** ❖ Endogenous causes: ○ Cushing disease: ACTH-secreting pituitary adenoma. **Most common endogenous cause** ○ Adrenal cortical adenoma or adrenal carcinoma ○ Ectopic production of ACTH→ small cell carcinoma of the lung
Features	❖ **Non-specific**→secondary diabetes, HTN, osteoporosis ❖ **More specific**→ central obesity with extremity wasting, moon facies, buffalo hump ❖ **Most specific**→spontaneous bruising, skin striae, proximal myopathy
Lab values changes	Some People Get Cold ❖ Sodium ↑, Potassium ↓, Glucose ↑ Calcium ↓
Diagnosis	❖ Step-1: To know whether patient has Cushing syndrome ○ 24 hours urinary free cortisol (Best initial test) ○ Dexamethasone suppression test (Most sensitive) ▪ Normal person→ suppress cortisol levels ▪ Cushing syndrome→ failure to suppress cortisol levels ❖ Step:2 To know cause of Cushing syndrome ○ Measure Plasma ACTH level: ▪ ↑ ACTH level →source is adrenal glands ▪ ↓ ACTH level→ source is either Pituitary ACTH tumor or Ectopic ACTH production ❖ Step: 3 To differentiate between Pituitary and ectopic ACTH production ○ 48-hour high dose dexamethasone suppression test: ▪ It involves administration of dexamethasone 6 hourly for 48 hours, measuring 24-hour urinary cortisol 2nd day ▪ If ACTH is suppressed → source is pituitary gland, next step is do MRI brain ▪ If ACTH is not suppressed→ source is ectopic ACTH, next step is do CT chest/abdomen

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148. **A patient presents with proximal myopathy and hypertension. His serum cortisol did not suppress on low dose dexamethasone suppression test but it decreased on high dose dexamethasone suppression. What is the diagnosis?**
   a. Adrenal adenoma
   b. Cushing's disease
   c. Ectopic ACTH
   d. Pseudo-Cushing syndrome

Ans: **B**

149. **Which initial test helps to differentiate Cushing disease from Cushing syndrome?**
   a. Low dose dexamethasone suppression test
   b. High dose dexamethasone suppression test
   c. Serum ACTH

Ans: **C**

- Cushing Disease= Raise ACTH
- Cushing syndrome= ACTH is not increased

150. **Which test helps to differentiate Cushing disease from ectopic ACTH syndrome?**
   a. Low dose dexamethasone suppression test
   b. High dose dexamethasone suppression test
   c. Serum ACTH
   d. Urinary cortisol levels

Ans: **B**

151. **A patient with increased serum cortisol and increased serum ACTH will have?**
   a. Cushing syndrome
   b. Cushing disease
   c. Polycystic ovarian syndrome

Ans: **B**

152. **A lady with Hirsutism, Hyperglycemia, HTN and increase ACTH. Diagnosis?**
   a. Addison's disease.
   b. Pheochromocytoma
   c. Cushing's disease.
   d. Hypophysectomy

Ans: **C**

153. **Cushing syndrome investigation?**
   a. Increase cortisol, decrease ACTH
   b. Increase cortisol, increase ACTH
   c. Decrease cortisol, decrease ACTH
   d. Decrease cortisol, increase ACTH

Ans: **A**

154. **A 24-year lady with BMI=30 complains of facial hair growth, hirsutism & irregular menstrual periods, her BSR=200mg/ dl, BP =160 /100 what is your most probable diagnosis?**
   a. Polycystic ovarian syndrome
   b. Metabolic syndrome
   c. Cushing syndrome
   d. Addison disease

Ans: **C**

155. **An obese patient having BMI>30, with hirsutism, pigmentation in neck, irregular menses, BP120/70, Diagnosis?**
   a. Polycystic ovarian syndrome
   b. Metabolic syndrome
   c. Cushing syndrome
   d. Addison disease

Ans: **A**

156. **Test used to differentiate between true Cushing's and pseudo-Cushing's?**
   a. Short synacthen test
   b. Overnight dexamethasone suppression test
   c. 24-hour urinary cortisol levels
   d. Insulin stress test

Ans: **D**

157. **Scenario of Cushing syndrome, which single test you would order for confirmation?**
   a. Overnight dexamethasone suppression test
   b. 24-hour urinary cortisol
   c. MRI
   d. Urinary Metanephrine

Ans: **A**

Radiant Notes

Key Notes

- PCO's and Cushing have almost same features---Except Cushing patients are hypertensive
- The overnight dexamethasone suppression test is the best test to diagnosis Cushing's syndrome
- Pseudo-Cushing's: mimics Cushing's
  - ✓ Often due to alcohol excess or severe depression
  - ✓ Causes false positive dexamethasone suppression test or 24 hr urinary free cortisol
  - ✓ **Insulin stress test may be used to differentiate**

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158. Patient presents to you with lethargy Blood pressure on lying is recorded as 110/70. While during standing you noticed a drop of 20 mmHg in systolic blood pressure. The cause is

a. Diabetes
b. Addison disease
c. Dehydration
d. Secondary adrenal insufficiency

Ans: **B**

159. 40 years lady of normal weight presented with fatigue. On investigation she has low glucose, serum cortisol decreased and ACTH decreased. What is your diagnosis?

a. Addison's disease
b. Secondary adrenal insufficiency
c. Hyper insulinoma
d. Cushing Syndrome

Ans: **B**

160. Middle age lady presented with increased tanning of skin, generalized weakness, investigations showed cortisol decreased, ACTH increased, which one of the following investigations is most likely to reveal the diagnosis?

a. Serum glucose
b. TSH
c. Overnight dexamethasone suppression test
d. Short synacthen test

Ans: **D**

161. A female patient presents to you with weakness and lethargy for 2 months. You ordered some labs which showed Na 122 mEq/L, K 5.9 mmol/L, TSH normal. Next step?

a. Short synacthen test
b. Water deprivation test
c. Dexamethasone suppression test
d. Free T4 levels

Ans: **A**

162. A 22-year-old male was admitted with complaints of weakness and weight loss for several weeks. His blood pressure is 80/50 mmHg, investigation reveals Na: 122, K: 6.3, HCO3: 30mmol/L, investigation?

a. Water deprivation test
b. Overnight Dexamethasone suppression test
c. Metanephrine levels in urine
d. Short synacthen test

Ans: **D**

163. A young male develops high grade fever, rash and altered consciousness. On examination there is neck stiffness and multiple bruises over his legs. Which complication should you look for in this patient?

a. Cerebral abscess
b. Respiratory failure
c. Adrenal insufficiency
d. DIC

Ans: **C**

Addison's Disease (Primary adrenal insufficiency)

- Causes:
  - This disorder is most commonly due to idiopathic adrenal atrophy
  - It can also be caused by tuberculosis (formerly most common cause),
  - Metastatic tumor
  - Various infections (e.g. HIV)
- Characteristics
  - **Postural Hypotension**
  - **Increased pigmentation of skin (especially palmar crease)**
  - Serum Na, Cl-, glucose, and HCO_3→ decreased
  - **Serum potassium→ Increased**
  - **↑ ACTH, ↓ Cortisol, ↓ Aldosterone**
- Diagnosis:
  - *Short synacthen test (short ACTH-suppression test)*:
    - 250 µg ACTH IM injection given
      - Normal individual → ↑ cortisol
      - Primary adrenal insufficiency→↓ ACTH
      - Secondary adrenal insufficiency→↑ACTH
- Treatment
  - **Replace steroids:**
    - ✓ 15–25mg *hydrocortisone* daily
    - ✓ Mineralocorticoids to correct postural hypotension
    - ✓ **Double steroids in febrile illness, injury or stress.**

Waterhouse-Friderichsen Syndrome

- This catastrophic adrenal insufficiency and vascular collapse is due to hemorrhagic necrosis of the adrenal cortex.
- This syndrome is often associated with DIC.
- This syndrome is characteristically due to meningococcaemia, most often in association with meningococcal meningitis.

Secondary Adrenal Insufficiency

- Seen with ↓ pituitary ACTH production.
- **No skin/mucosal hyperpigmentation**
- No hyperkalaemia (aldosterone synthesis preserved due to intact renin angiotensin-aldosterone axis)
- **↓ ACTH, ↓ Cortisol**

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Endocrinology

164. Patient presented with few episodes of vomiting, abdominal pain usually from few days, and hypothyroidism, Diagnosis?

a. Addison disease
b. Conn syndrome
c. Liddle syndrome

Ans: **A**

165. An old male already diagnosed case of Addison's disease currently on steroids is admitted in your ward with pneumonia. Appropriate step?

a. Continue the same dose of steroids
b. Reduce dose of steroids to ½.
c. Increase the dose of steroids
d. Steroids on alternate days

Ans: **C**

166. Which one of the following is not a cause of adrenal insufficiency?

a. AIDS
b. DM
c. Hemochromatosis
d. Amyloidosis.

Ans: **B**

167. Most common cause of Addison disease in HIV patient?

a. CMV
b. Tuberculosis
c. Histoplasmosis

Ans: **B** (Ref: Rosen's Emergency Medicine - Concepts and Clinical Practice, Pg: 1672)

168. Commonest cause of primary adrenal insufficiency is:

a. Tuberculosis
b. Idiopathic
c. Metastatic diseases
d. HIV

Ans: **A**

169. Commonest cause of secondary adrenal insufficiency is:

a. Iatrogenic
b. Tuberculosis
c. Autoimmunity
d. Waterhouse- Friderichsen Syndrome

Ans: **A** (This is not a real IMM exam question just added so you can know the difference)

170. Which one of the following is a complication of meningococcal meningitis?

a. Cranial nerve palsy
b. Brain abscess
c. Adrenal insufficiency

Ans: **C**

171. On imaging an accidental finding of 2.5 cm mass in adrenal gland but the patient is asymptomatic. What is your next step in management?

a. Observe
b. Surgery
c. FNAC
d. Metanephrine levels in urine and serum.

Ans: **D** (called Adrenal incidentaloma)

172. True regarding Addison's disease?

a. Water diuresis is impaired
b. Serum calcium is elevated
c. Skin is shiny and pale

Ans: **A**

173. 40 years old lady presented in OPD with fever from few days collapsed suddenly. 6 years ago, she was advised anti-tuberculosis treatment. On examination BP 100/70, pulse 100, and mild sun tan present, treatment?

a. IV thyroxine
b. IV antibiotics
c. IV hydrocortisone

Ans: **C**

174. A young patient presented in ER with confusion and high-grade fever. He was on medication for pulmonary Tuberculosis started few weeks ago. Investigations revels RBS 80mg/dL, Na: 127, K: 5.9, HCO3: 30mmol/L, which structure will be affected?

a. Pituitary gland
b. Hypothalamus
c. Kidneys
d. Adrenal glands

Ans: **D**

Radiant Notes

Addisonian crisis

- Causes
  - Infection, trauma, surgery, missed medication.
  - often (but not always!) in a patient with known Addison's (e.g. when oral steroid has not been increased to cover stress such as pneumonia
- Characteristics
  - Shock (tachycardia, peripheral vasoconstriction, severe postural hypotension occasionally with syncope, oliguria, profound muscle weakness, confusion, altered consciousness leading to coma)
  - **Hyperkalaemia, hyponatremia, hypoglycemia.**
- Management
  - If suspected, treat before biochemical results.
  - Bloods for cortisol and ACTH & Check Potassium
  - Hydrocortisone 100mg IV stat then 8 hourly
  - IV fluid bolus, crystalloid or colloid to support BP.
  - Monitor blood glucose: **the danger is hypoglycemia.**
  - Blood, urine, sputum for culture, then antibiotics if concern about infection
  - Change to oral steroids after 72h if patient's condition good.

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175. Most common cause of primary hyperaldosteronism
a. Adenoma
b. Adrenocortical hyperplasia
c. Carcinoma
d. Glucocorticoids

Ans: **A** (Ref Oxford handbook of medicine pg:220)

176. 26 years old male presented with hypertension and weakness. On investigation Serum potassium was LOW i.e. 2.5, Diagnosis
a. Conn's syndrome
b. Pheochromocytoma.
c. Bartter's syndrome
d. Gitelman syndrome

Ans: **A**

177. Patient presented with hypertension, headache, polyuria and polydipsia. On investigation K=2.5, Na= 148, pH=7.56, HCO3 29 cause
a. Bartter's syndrome
b. Conn's syndrome
c. Liddle's syndrome
d. Gitelman's syndrome
e. RTA

Ans: **B**

178. A hypertensive patient presents to you to OPD. he is currently on no antihypertensive medication. his labs show Na= 157, HCo3 =33, K =3, Your diagnosis will be
a. Cushing's syndrome
b. Conn's syndrome
c. Addison disease

Ans: **B**

179. Patient with hypertension and Hypokalemia, (other lab values were given as well)?
a. Liddle's syndrome
b. Bartter's syndrome
c. Gitelman syndrome
d. Renal tubular acidosis

Ans: **A**

180. Patient with metabolic alkalosis, Hypokalemia and normal B.P, diagnosis?
a. Liddle's syndrome
b. Bartter's syndrome
c. Gitelman syndrome
d. Renal tubular acidosis

Ans: **C**

181. Middle age male with complains of lethargy. On examination BP 120/70, Investigations revels Na 140 mmol/L, K =2.6 mmol /L, bicarb 33 mmol /L, which of the following conditions is most likely to be responsible?
a. Cushing's syndrome
b. Conn's syndrome
c. 11-beta hydroxylase deficiency
d. Bartter's syndrome
e. Liddle's syndrome

Ans: **D**

Radiant Notes

Primary Hyperaldosteronism (Conn syndrome)
- Cause is primary hyper production of adrenal mineralocorticoids
- Findings
  - **Hypertension, Hypokalemia, Metabolic alkalosis**
  - ↑ aldosterone, ↓ renin.

Liddle's syndrome
- Disordered sodium channels in the distal tubules leading to increased reabsorption of sodium. (similar to hyperaldosteronism)
- Findings:
  - **Hypertension + Hypokalaemia**

Bartter's syndrome
- It is due to defective chloride absorption at the Na+ K+ 2Cl- cotransporter in the ascending loop of Henle (like furosemide—think of this disease as like taking large doses of furosemide)
- Findings:
  - **Normotension + severe hypokalaemia**

Gitelman's syndrome
- Is due to a defect in the thiazide-sensitive Na+ Cl- transporter in the distal convoluted tubule.
- Findings:
  - **Normotension + hypokalaemia + hypomagnesemia**

Endocrinology

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Endocrinology

182. Young girl of 20 years with multi episodes of anxiety, tachycardia, sweating and headache, on examination blood pressure is 145/85, best investigation in this case

a. Thyroid hormone levels
b. 24 hours urinary metanephrine levels
c. ACTH levels

Ans: **B**

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183. A 38-year-old woman is found to have episodic headache, palpitation, and diaphoresis, along with severe hypertension. She is also found to have Hyperglycemia, but diabetes mellitus has been ruled out. These findings suggest an endocrine tumor secreting which of the following hormones?

a. Antidiuretic hormone (ADH)
b. Catecholamines
c. Insulin
d. PTH
e. Prolactin

Ans: **B**

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184. A 20 years old female presented with palpitations and abdominal pain B/P was 140/90 which was normal 2 days back what is most likely Diagnosis?

a. Addison disease
b. Pheochromocytoma
c. Cushing's disease
d. Thyrotoxicosis
e. Anxiety

Ans: **B**

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185. Young patient with palpitation and episodic hypertension, Investigation of choice?

a. 24 hours urine catecholamines
b. 24- hours urine metanephrines
c. Direct epinephrine levels

Ans: **B**

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186. Pheochromocytoma investigation?

a. Urinary VMA
b. 24 hr urinary metanephrines
c. 24 hr urinary catecholamines

Ans: **B**

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187. A 20-year-old female presented to emergency with history of episodic headache, palpitation and abdominal pain, what is your most likely diagnosis?

a. Adrenaloma
b. Pheochromocytoma
c. Congenital adrenal hyperplasia

Ans: **B**

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188. Middle age male with pheochromocytoma and hypertension, drug that can be used?

a. Propranolol
b. Amlodipine
c. Ramipril
d. Atenolol
e. Phenoxybenzamine

Ans: **E**

Radiant Notes

Pheochromocytoma

Causes	❖ *Most common tumor of the adrenal medulla in adults* ❖ Derived from chromaffin cells (arise from neural crest). ❖ May be associated with MEN 2A, 2B, von Hippel-Lindau disease
Rule Of 10's	❖ 10% malignant ❖ 10% bilateral ❖ 10% extra-adrenal (e.g., bladder wall) ❖ 10% calcify ❖ 10% kids
Symptoms	❖ Episodic hyper adrenergic symptoms (5 P's): o Pressure (↑BP) o Pain (headache) o Perspiration o Palpitations (tachycardia) o Pallor
Lab	❖ 24 hr urinary collection of metanephrines (sensitivity 97%) ❖ This has replaced a 24-hr urinary collection of catecholamines (sensitivity 86%) ❖ Imaging of the adrenal glands with CT or MRI is done only after biochemical testing. ❖ MIBG scanning: This is a nuclear isotope scan that detects the location of pheochromocytoma that originates outside the adrenal gland
Treatment	Mnemonic: Phenoxybenzamine (16 letters) is given for Pheochromocytoma (also 16 letters). ❖ Irreversible α-antagonists (e.g., phenoxybenzamine) followed by β-blockers prior to tumor resection. ❖ α-blockade must be achieved before giving β-blockers to avoid a hypertensive crisis.

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189. Patient with pheochromocytoma and HTN crisis what drug is used to control?
a. Phentolamine
b. B-blocker
c. Nitroprusside
d. Nimodipine
Ans: A

190. Young girl of 20 years with 4 episodes in last 6 months of anxiety, tachycardia, sweating and headache, on examination blood pressure is 145/85, best investigation in this case
a. Thyroid hormone levels
b. 24 hours urinary metanephrine levels
c. ACTH levels
Ans: B

191. Diagnostic test for localization of pheochromocytoma among the following
a. MRI with MIBG scan
b. CT with MIBG scan
c. Angiography
Ans: A

192. Regarding Pheochromocytoma. What should be checked first before operating?
a. 24 Hour urinary metanephrines
b. 24-hour free urinary cortisol
c. Urinary Catecholamines
Ans: A

193. Patient relative has history of medullary ca of thyroid, how will u screen her for pheochromocytoma
a. 24 hr urinary catecholamines
b. MRI
c. 24 hours cortisol levels
Ans: A

194. A patient diagnosed as a case of medullary carcinoma, which of the following neoplasm can he have in future?
a. Renal Carcinoma
b. Esophageal Carcinoma
c. Pheochromocytoma
d. Prostate carcinoma
Ans: B

195. Which of the following is the most common presentation of MEN-1?
a. Zollinger Ellison syndrome
b. Adrenal adenoma
c. Primary hyperparathyroidism
d. Acromegaly
Ans: C

196. A young female with amenorrhea is referred due to high blood pressure. She also has history of renal stones and recurrent episodes of hypoglycemia. What is the diagnosis?
a. MEN-1
b. MEN-2A
c. Schmidt's disease
d. Devic's disease
Ans: A

197. Most useful test to monitor in patients with family history of multiple endocrine neoplasia type 1?
a. Urinary catecholamines
b. Serum calcium
c. Thyroid function tests
Ans: B

198. Middle age female with peptic ulcer on upper endoscopy. Her serum calcium level is 12 mg/dL. Select the most likely diagnosis.
a. MEN-1
b. MEN-2A
c. MEN-2B
Ans: A

Radiant Notes

MEN-I (Wermer syndrome)	❖ 3P'S includes hyperplasia or tumors of the ○ Pituitary ○ Parathyroid, or ○ Pancreatic islets (insulinoma, gastrinoma--leading to recurrent peptic ulceration) ❖ In addition, it may include hyperplasia's or tumors of the thyroid or adrenal cortex. ❖ Common presentation= Hypercalcemia
MEN-IIa (Sipple syndrome)	❖ Medullary thyroid cancer (70%) ❖ 2P's ○ Phaeochromocytoma ○ Parathyroid (60%)
MEN-IIb (MEN III)	❖ Medullary carcinoma ❖ Multiple mucocutaneous neuromas or ganglioneuromas. ❖ 1P's ○ Pheochromocytoma,

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Endocrinology

199. A 61-year-old male presents with the chief complaint of "coughing up blood and weakness". He has recently developed lower extremity muscle cramps, investigations normal, what is the most likely diagnosis?

a. Bronchial carcinoid
b. Adenocarcinoma
c. Large cell carcinoma
d. Squamous cell carcinoma
e. Small cell carcinoma

Ans: E

200. Cushing syndrome is the most important feature of which malignancy?

a. Meningioma
b. Bronchogenic Carcinoma
c. Adrenal Carcinoma

Ans: B

201. In squamous cell cancer, which one of the following paraneoplastic syndromes is commonly seen?

a. Hyperthyroidism
b. Eaton-Lambert Myasthenic Syndrome
c. SIADH

Ans: A

202. Small cell carcinoma of lung causes?

a. Cushing disease
b. Cushing syndrome
c. Hyperthyroidism
d. Hypocalcemia

Ans: B

203. A man was found to have history of smoking multiple packs per day, has developed small cell carcinoma (oat cell). Which will be secreted by it

a. PTHrP
b. ACTH
c. Erythropoietin

Ans: B

204. Small cell ca causes which one of the following?

a. Diabetes insipidus
b. Renal cell carcinoma
c. Hyperparathyroidism
d. SIADH

Ans: D

205. A 49-year-old man is diagnosed with small cell cancer with progressive truncal ataxia. MRI brain is normal. what is most likely diagnosis?

a. Paraneoplastic syndrome
b. Addison's disease
c. Cushing's syndrome

Ans: A

Radiant Notes

Paraneoplastic Syndromes (Endocrine)

- Caused by ectopic production of hormones or chemical substances inducing effects similar to those of a given hormone
- **Small cell carcinoma (lungs):**
  - Cushing syndrome----Adrenocorticotropic hormone (ACTH) or ACTH-like activity
  - Syndrome of inappropriate antidiuretic hormone secretion (SIADH)
  - Lambert-Eaton myasthenic syndrome: Antibodies against presynaptic Ca2+ channels
- **Squamous cell carcinoma**
  - PTH-hormone-like activity (hypercalcemia)

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206. A 50-year-old male obese with BMI 38, complain of increased thirst and urination. he was otherwise normal. what will be your first diagnostic test in such patient?
a. HBA1C
b. Fasting glucose test
c. Glucose tolerance test
d. Random glucose test
Ans: B

207. An obese 48-year-old man presents with lethargy and polydipsia what is the minimum HbA1C required for diagnosis of type-2 diabetes mellitus?
a. 6.0%
b. 6.5%
c. 7.0%
d. 7.5%
Ans: B

208. 32-year male presents with polyuria, polyphagia and polydipsia. Best test to diagnose diabetes mellitus is?
a. FBS
b. RBS
c. HBA1c
d. Urine DR
Ans: A

209. Which initial test is best to do in female with polyuria and weakness?
a. FBS
b. OGTT
c. Water deprivation test
d. Dexamethasone suppression test
Ans: A

210. Obese lady with polyuria, polydipsia, Her fasting blood glucose is 125mg/dL, best test to diagnose type 2 diabetes?
a. Random blood sugar
b. OGTT
c. HBA1C
d. Insulin level
Ans: B

211. An 18-week pregnant patient fasting blood glucose of 160. What investigation will you do next?
a. HBA1C
b. Oral glucose tolerance test
c. Random bloody glucose
d. Start her on insulin therapy
Ans: B

212. A young lady in 2nd trimester of pregnancy presented with polyuria, polydipsia, fasting blood sugar 116, the most appropriate test for diagnosis is?
a. Fasting blood glucose
b. Random blood glucose
c. Oral glucose tolerance test
Ans: C

Radiant Notes

Diabetes Mellitus Diagnosis

Criteria-1
- Symptomatic patients plus Abnormal venous glucose on **ONE** occasion i.e.
  - ✓ FBS ≥126mg/dL (≥7mmol/L) OR
  - ✓ RBS≥200mg/dL (≥11 mmol/L)

Criteria 2
- Asymptomatic patients plus Abnormal venous glucose on **TWO** occasions i.e.
  - ✓ FBS ≥126mg/dL (≥7mmol/L) OR
  - ✓ RBS≥200mg/dL (≥11 mmol/L)

Criteria 3
- HbA1C ≥6.5%
- **Conditions where HbA1c may not be used for diagnosis:**
  - Haemoglobinopathies
  - Haemolytic anaemia
  - Untreated iron deficiency anaemia
  - Suspected gestational diabetes
  - Children
  - HIV
  - CKD

Diabetes UK guidelines
- Diabetes UK suggests people with **IFG** should then be offered an **OGTT** to rule out a diagnosis of diabetes,
- OGTT also used for gestational diabetes
- OGTT
  - Preparation before test:
    - ✓ Unrestricted carbohydrate diet for 3 days
    - ✓ Overnight fasting for at least 8 hours
    - ✓ Sampling: plasma glucose is measured before and 2 hours after 75g oral glucose drink

	Normal	Impaired Glucose tolerance	DM
Fasting	<7mmol/L (<126mg/dL)	<7mmol/L (<126mg/dL)	≥7mmol/L (≥126mg/dL)
2 hours after glucose	<7.8 mmol/L (<140mg/dL)	7.8--11 mmol/L (140--199mg/dL)	≥11.1 mmol/L (≥200mg/dL

- **Management of Impaired glucose tolerance test**
  - Lifestyle modification: weight loss, increased exercise, change in diet
  - at least **yearly** follow-up with blood tests is recommended

Screening for gestational diabetes
- Previous Gestational diabetes—OGTT at 16-18 weeks
- Other patients with risk factors---OGTT at 24-28 weeks

Endocrinology

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Endocrinology

213. Patient in her 2nd trimester with history of previous macrosomic baby of 4.5kg, what to do next?
a. OGTT
b. Glucose challenge test
c. Fasting blood sugar
Ans: **A**

214. A 13 weeks pregnant female had fasting blood glucose of 127. What to do?
a. HbA1C
b. Oral glucose tolerance test
c. Random bold glucose
d. Start oral hypoglycaemic
e. Start insulin
Ans: **B**

215. A patient was advised OGTT, his fasting blood sugar came 99mg/dL, after 2 hours RBS 162mg/dL, Diagnosis?
a. Normoglycemia
b. Impaired glucose tolerance test
c. Diabetes mellitus
Ans: **B**

216. A 44-year-old obese patient with findings: FBS=6mmol/l, OGTT=10mmol/l. What is the most likely diagnosis?
a. Impaired glucose tolerance
b. Diabetes insipidus
c. Type-1 DM
d. Type-2 DM
e. MODY
Ans: **A**

217. A patient presents with spells of dizziness and falls with loss of consciousness investigation of choice.
a. Blood glucose
b. Serum ketones
c. Serum osmolality
Ans: **A**

218. A 20-year-old male diabetic becomes unconscious, while playing tennis. most common cause of his unconsciousness?
a. DKA
b. Hypoglycemia
c. Hyperglycemia
d. Myocardial ischemia
Ans: **B**

219. A type 1 diabetic tennis player presents to you in ER with profuse sweating and altered state of consciousness. your diagnosis?
a. HOCM
b. Hypoglycemia
c. Alcohol abuse
d. Encephalitis
Ans: **B**

220. What is common in hyperthyroid, diabetes mellitus type 1 and anorexia nervosa
a. Weight loss
b. Weight gain
c. Sweating.
d. Diarrhea
Ans: **A**

221. Which type of MODY respond to sulphonylurea?
a. MODY 1
b. MODY 2
c. MODY 3
d. MODY 4
Ans: **C**

Radiant Notes

Diabetes Mellitus Types

Type	Type-1 diabetes	Type-2 Diabetes
	❖ Also known as insulin dependent diabetes mellitus (IDDM)	❖ Also known as Non-insulin dependent diabetes mellitus (NIDDM)
Cause	❖ Autoimmune destruction of β cells	❖ ↑ resistance to insulin, progressive pancreatic ❖ β-cell failure
Epidemiology	❖ Younger patients usually < 30 years ❖ Usually lean	❖ Older patients usually > 30 years ❖ Usually overweight
Genetics	❖ Family history uncommon ❖ HLA DR3 and HLA DR4 association ❖ 30-50% concordance rate in identical in identical twins	❖ Family history common ❖ No HLA association ❖ >90% accordance rate in identical twins

Maturity-onset diabetes mellitus of the young (MODY)

❖ This autosomal dominant syndrome is characterized by mild Hyperglycemia and hyposecretion of insulin but no loss of beta cells.
❖ It has an earlier onset (typical age **< 25 years old)** than type 2 diabetes mellitus.
❖ It is caused by a diverse group of single gene defects. Such as **glucokinase gene (MODY 2), HNF-1 alpha gene (MODY 3 most common)**

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222. A 71-year-old women with a history of type2 diabetes mellitus presents with lethargy and polyuria. A diagnosis of hyperosmolar hyperglycaemic state is considered. Which one of the following findings would be least consistent with this diagnosis?

a. pH of 7.33
b. ketones1+ in urine
c. serum osmolality 310 mOsm/kg
d. serum bicarbonate of 19mmol/l

Ans: **C**

---

223. A patient with type 1 diabetes mellitus is reviewed in the nephrology outpatient clinic. He is known to have stage 1 diabetic nephropathy. Which of the following best describes his degree of renal involvement?

a. Latent phase
b. Hyperfiltration
c. End-stage renal failure
d. Microalbuminuria

Ans: **B**

---

224. An old type 2 diabetic female lady presents to you in Emergency. you suspect her a diagnosis of hyperosmolar Hyperglycemia Non-ketotic coma. Which one of the following would confirm the diagnosis?

a. Serum osmolality of more than 320 mOsm
b. Ketones 2+ in urine
c. PH of 7.32
d. Serum bicarbonate of 19 mmol/l

Ans: **A**

---

225. A 19-year-old woman was suffering from high grade fever, productive cough, shortness of breath, diffuse abdominal pain and vomiting. She is emaciated and dehydrated. Investigation reveals, Blood glucose: 28mmol/L, serum Na: 118, Serum K+: 4.7mmol/L bicarbonate 8.1 mmol/L, serum creatinine 1.1 mg/dL, Diagnosis?

a. Hyperosmolar non-ketotic coma
b. Diabetic ketoacidosis
c. Metabolic alkalosis

Ans: **B**

---

226. A young patient semi unconscious presented with HCO3 <10mmol/L, pH 7.1, and K=2.5, diagnosis?

a. Diabetic ketoacidosis
b. Addison's disease
c. Lactic acidosis

Ans: **A**

---

227. An old patient with high RBS & serum osmolarity 340mOsm/L, Diagnosis?

a. HONK
b. DKA
c. Dehydration

Ans: **A**

Radiant Notes

Diabetic ketoacidosis (DKA)

- Typical Picture
  - Gradual drowsiness, vomiting and dehydration in type 1 diabetic (very rarely type 2)
  - Polyuria, polydipsia, lethargy, anorexia, ketotic breath, dehydration, coma, or deep breathing (sighing 'Kussmaul' hyperventilation)
- Triggers
  - Infection (e.g. UTI), surgery, MI, pancreatitis, chemotherapy, wrong insulin dose/non-compliance.
- Diagnosis
  - **Acidemia (blood pH <7.3 or HCO3 <15 mmol/L**
  - **Hyperglycemia**
  - **Ketonemia (Ketones > 3mmol/L in blood---or more than 2+ on urine dipstick)**

Hyperglycemic hyperosmolar non-ketotic (HONK) coma

- Typical Picture
  - is caused by intercurrent illness, inadequate diabetic therapy and dehydration.
  - It develops over days/weeks, and is more common in the elderly.
  - HHS is characterized by ↑ glucose levels, ↑ blood osmolality, and a lack of urinary ketones.
- Diagnosis
  - **Hyperglycemia (> 35mmol/L or >630mg/dL)**
  - **Altered mental status**
  - **Serum osmolarity > 320 mOsm/L (Normal 270-290 mOsm/L)**
  - **Lack of urinary Ketones**

Diabetic retinopathy

- Hyperglycemia increases retinal blood flow and metabolism which leads to chronic retinal hypoxia→stimulates production of growth factors causing new vessels formation and increased vascular permeability
- Classification:
  - Non-proliferative retinopathy
    - Microaneurysms, blot hemorrhages, hard exudates, cotton wool spots
  - Proliferative retinopathy:
    - Retinal neovascularisation - may lead to vitreous haemorrhage
    - Fibrous tissue forming anterior to retinal disc

Diabetic nephropathy

- All patients should be checked annually
- Albumin: Creatinine ratio (ACR) in early morning specimen
  - ACR > 2.5 in male, > 3.5 in female = microalbuminuria **(This is roughly equivalent to the loss of 30-300 mg of albumin in the urine per 24 hours)**
- Rx: ACE or ARB

Endocrinology

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228. A young patient presented to ER with complaint of abdominal pain and increased frequency of micturition. ABGs show PH of 7.1, urine R/E shows glucose +2 and plenty of puss cells. what's the diagnosis?

a. DKA
b. HHS
c. Lactic acidosis
d. Metabolic acidosis

Ans: **A**

229. In a patient with diabetes, which is the best antihypertensive drug?

a. Captopril
b. Diuretic
c. Verapamil
d. Propranolol
e. Diltiazem

Ans: **A**

230. Urine Examination of a patient with diabetes demonstrates Ketone-bodies. What is the mechanism of formation of these ketone-bodies?

a. Insulin deficiency
b. Hyperglycemia
c. Defective fat metabolism
d. Hypoalbuminemia
e. Defective glucose metabolism

Ans: **A**

231. A 65-year-old patient suffering from NIDDM. he is on metformin.one day he is found collapsed in a street with sighing breath and he was drowsy. How will u explain his present condition?

a. Metformin induced hypoglycemia
b. Ketoacidosis
c. Adrenal insufficiency
d. Hypoglycemia
e. Lactic acidosis

Ans: **E**

232. Earliest investigation in diabetic nephropathy?

a. Serum urea
b. proteinuria
c. urinary ketones
d. Microalbuminuria

Ans: **D**

233. Which of the following is the key investigation to exclude early diabetic nephropathy?

a. Blood urea and creatinine
b. Microalbuminuria
c. Serum cholesterol
d. Blood sugar level
e. Renal biopsy

Ans: **B**

234. Patient DM type 1 having family history positive. Father died of CRF. By what investigation we will assess his renal involvement.

a. Microalbuminuria
b. Blood urea and creatinine
c. Renal biopsy

Ans: **A**

235. Most sensitive marker of proteinuria in a patient with DM is?

a. 24-hour urine protein.
b. Micro-albuminuria
c. Urea: creatinine ratio

Ans: **B**

236. In microalbuminuria urine albumin is:

a. 30-300mg/24hrs
b. 350 mg/ 24hrs
c. 500 mg/ 24hrs
d. 600 mg/24 hours

Ans: **A**

237. What is the cut off limit for microalbuminuria in 24 hours urine of diabetic person?

a. 50mg/ 24 hours
b. 350 mg/24 hours
c. 500 mg/ 24 hours

Ans: **A**

238. In diabetic mother, which one of the following is not dangerous foetus?

a. Hypoglycemia
b. Ketoacidosis
c. Ketones
d. Ketonuria

Ans: **D**

239. Which of the following is characteristic of diabetic neuropathy?

a. Pain is not a feature
b. Spares the autoimmune system
c. Commonly affects the brain
d. It is usually bilateral

Ans: **D**

240. Total cholesterol in Diabetes Mellitus 2 should be less than

a. 200mg /dl
b. 190mg/dl
c. 180mg/dl
d. 170mg/dl

Ans: **D**

241. Diabetic patient develops HTN, and symptoms of intermittent claudication. Drug to be given

a. ACE inhibitors
b. calcium channel blockers
c. Beta Blockers
d. Diuretics

Ans: **A** (This is one of the controversial MCQ's few are with CCB—for me ACEI >>CCB—Mentioning here as u might want to do your own research as well)

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242. A 25-year-old male with type I diabetes mellitus presented to medical ER with ketonic breath, severe Hyperglycemia and a blood pH of 7.0. The most appropriate drug to rapidly improve his condition is:
- a. Insulin glargine
- b. Insulin isophane
- c. Regular insulin

Ans: **C**

243. Drug of choice to control proteinuria in a diabetic patient is:
- a. Amlodipine
- b. Bisoprolol
- c. Lisinopril
- d. Prazosin

Ans: **C**

244. 65 years old diabetic Patient who had angioedema recently now becomes hypertensive, drug of choice for him?
- a. Losartan
- b. Metoprolol
- c. Captopril

Ans: **A**

245. A diabetic patient taking metformin presented in unconscious state with ABGs showing metabolic acidosis. Investigation reveals RBS normal, Na+ 150, K+ 5.3, while ketones negative, Diagnosis?
- a. Lactic acidosis
- b. Ketoacidosis
- c. Adrenal insufficiency
- d. Hypoglycemia

Ans: **A**

246. Which one of the following drugs is used as antihypertensive agent with associated co-morbid condition?
- a. HTN and Angina = ACE inhibitors
- b. HTN and Diabetes = ACE inhibitors
- c. HTN and COPD= beta blockers
- d. HTN and Hyperglycemia= beta blockers
- e. HTN and asthma= beta blockers

Ans: **B**

247. How to treat erectile dysfunction of a diabetes patient?
- a. Sildenafil
- b. Metformin
- c. GTN
- d. Loprin
- e. Ergot derivatives

Ans: **A**

248. Patient with Glove and stocking distribution neuropathy and absent planters, diagnosis?
- a. Vitamin B12 deficiency anemia
- b. Diabetes Mellitus
- c. Syringomyelia

Ans: **B**

Radiant Notes

Class	Drug names	Side Effects
Biguanides	Metformin **"Used particularly if the patient is overweight"**	GI upset Contraindicated in Renal insufficiency B12 deficiency anemia
Sulfonylureas	Chlorpropamide Tolbutamide Gliclazide Glimepiride Glipizide Glyburide	Hypoglycemia Weight gain
Meglitinides	Nateglinide Repaglinide	
Thiazolidinediones	Pioglitazone Rosiglitazone	Weight gain, edema, HF, inc risk of fractures.
Dipeptidyl Peptidase-4 (DPP-4) Inhibitors	Sitaglipitin Vildagliptin	
α-glucosidase inhibitors	Acarbose	GI upset
GLP-1 analogs	Exenatide, liraglutide (sc injection)	Nausea, vomiting, pancreatitis;
Insulin		Hypoglycaemia Lipodystrophy

Treatment of Diabetes

- Lifestyle interventions
- Usually metformin is first-line, if the HbA1c remains >48 mmol/mol (6.5%) then start
  - Sulfonylurea
  - If the patient is at risk from hypoglycaemia (or the consequences of) then a DPP-4 inhibitor (gliptin) or thiazolidinedione should be considered rather than a sulfonylurea
- Meglitinides (insulin secretagogues) should be considered for patients with an erratic lifestyle
- Still ----If the HbA1c remains >58 mmol/mol (7.5%)—start insulin
  - Metformin treatment should be continued after starting insulin
- Exenatide:
  - When BMI > 35
  - Continue only if beneficial response occurs and is maintained (> 1.0 percentage point HbA1c reduction and weight loss > 3% at 6 months)

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249. An elderly diabetic female, who was a known case of rheumatoid arthritis and ischemic heart disease, had a road traffic accident and was prescribed some medicines for it. When her baselines were done, she had a serum K+=6.5. Which of the following drug is the culprit drug?

a. Diclofenac potassium
b. Trimethoprim
c. Chloroquine
d. Losartan potassium

Ans: D

250. A 49-year-old diabetic and hypertensive man comes to you in cardiology OPD for regular check-up. He had MI 1 year back. He complains of being getting overweight in the past few months. Which drug do you think contributes to his weight gain?

a. Metformin
b. Clopidogrel
c. Statins
d. Gliclazide
e. Losartan

Ans: D

251. A 42-year-old male suffers from morbid obesity having fasting blood glucose of 8.2 mmol, with symptoms of frequent nocturia and lethargy. which of the following would be the most appropriate medication for him?

a. Pioglitazone
b. Rosiglitazone
c. Gliclazide
d. Basal bolus insulin
e. Metformin

Ans: E

252. An obese patient presents to you with fasting blood sugar level of 180. His HBA1C is 8.6 how will you treat him?

a. Insulin
b. Pioglitazone
c. Biguanides
d. Metformin

Ans: D

253. A diabetic patient presents to you in diabetes clinic. he is also a known case of coronary artery disease. your treatment of choice?

a. Short acting insulin
b. Sulfonylurea
c. Long acting insulin
d. Biguanides

Ans: D (metformin reduces cardiovascular mortality--but if the scenario comes with active MI—then insulin would be a better option as metformin can cause lactic acidosis)

254. A patient who had MI recently has been diagnosed to have diabetes FBS 150 RBS 230 and HbA1C 9 and hyperlipidaemia, what is the best management?

a. Dietary modification
b. Exercise
c. Start insulin
d. Metformin
e. Glimepiride

Ans: C

255. A middle aged male diabetic patient with BMI of 26 on metformin only presented with uncontrolled blood sugar. His HBA1c is 12.1. what is the next best step in management?

a. Add sulphonylurea
b. Switch to insulin
c. Meglitinides

Ans: A

256. Which Oral Hypoglycaemic drug causes, fine crepts?

a. Metformin
b. Glibenclamide
c. Sitaglipitin
d. Pioglitazone

Ans: D

257. 32-years old patient diagnosed case of Diabetes type-1 for 19 years, he is currently on NPH. Investigation revels HBA1C 7.0 and was having 2+ albumin in urine plus he wasn't monitoring his daily sugar. what is next best management?

a. Start ACEi
b. Monitoring of NPH units
c. Add Insulin Regular at lunch time
d. Counsel him for insulin Pump

Ans: A

258. Obese female with RBS 115, treatment for her

a. Exercise
b. Metformin
c. Insulin

Ans: A

259. Obese patient presented with polyurea, labs showed FBS 180, HBA1C 8.5, diagnosed as DM, drug of choice for her

a. Insulin
b. Pioglitazone
c. Pioglitazone
d. Pioglitazone + insulin
e. Metformin

Ans: E

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260. Chronic diabetic patient having complaints of bloating etc. Doctor diagnosed as diabetic gastroparesis. Which drug would be useful for her?

a. Metoclopramide
b. Sucralfate
c. Omeprazole

Ans: **A**

---

261. A 50-year-old diabetic patient with bloating and abdominal distention, treatment?

a. Phenothiazines
b. Prochlorperazine
c. Erythromycin
d. Sucralfate

Ans: **C**

---

262. Scenario of gastroparesis, investigation?

a. Gastric emptying scintigraphy
b. 24-hour pH monitoring
c. Endoscopy
d. Manometry

Ans: **A**

---

263. Insulin Glargine is not mixed with:

a. Regular
b. NPH
c. Lispro
d. Aspart
e. All of these

Ans: **E**

---

264. Regarding insulin:

a. Lispro is intermediate acting
b. Glargine is ultrashort acting
c. Glargine cannot be mixed with soluble insulin (NPH)
d. Lispro cannot be mixed with soluble insulin

Ans: **C**

---

265. Insulin cause all of the following except;

a. Hypokalemia
b. Cut loss
c. Hypoglycemia
d. Increased fat deposition

Ans: **B**

---

266. All are side effects of insulin, except:

a. Insulin allergy
b. Lipodystrophy
c. Hypoglycaemia
d. Edema
e. Weight loss

Ans: **E**

---

267. Which of the following is the immediate effect of Insulin?

a. Potassium entry into cells
b. Transport glucose into extracellular space

Ans: **A**

---

268. Which of the following can cause Hypokalemia?

a. Ketoconazole
b. Beta blockers
c. Insulin
d. Chloroquine

Ans: **C**

---

269. A patient presented with DKA, labs showed Serum sodium 124, RBS 700mg/dl, corrected sodium will be?

a. 124
b. 134
c. 144
d. 154

Ans: **B**

✓ The proposed formula was: corrected sodium = measured sodium + [1.6 (glucose – 100) / 100]

Radiant Notes

	Examples	Onset
Rapid Acting	Lispro Aspart Glulisine	< 15 minutes
Short Acting	Regular	30-60 mins
Intermediate Acting	NPH	1-2 hours
Long Acting	Detemir Glargine	1-2 hours

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270. Patient complains of weight gain and fasting hypoglycemia. His C-peptide level is 1.87 nmol/L. what is the diagnosis?

a. Acromegaly
b. Insulinoma
c. Hepatocellular carcinoma
d. MODY

Ans: **B**

271. In a patient with suspected insulinoma, which one of the following is considered the best investigation?

a. Oral glucose tolerance test
b. Insulin tolerance test
c. Early morning C peptide level
d. Glucagon stimulation test
e. Supervised fasting

Ans: **E**

272. A 24-year-old nurse presents with complains of weight gain. Her blood glucose was 50mg/dl and C-Peptide was 1.8 nmol/L. What is the diagnosis?

a. Insulin abuse
b. Insulinoma
c. Pregnancy
d. Cushing's disease

Ans: **B**

273. A nurse presents to you in emergency department to collapsed state. Her brother tells that she had a dispute with her elder sister over an argument Her BSR =42mg/dL, C-Peptide was 0.1nmol/L you administered dextrose saline. after some time, she seems to be well oriented. what do you think will be the reason?

a. Insulinoma
b. self-administration of insulin
c. Hypokalemia

Ans: **B**

274. Female with night time diplopia three FBS reading 2.4,3.4 3.5mmol, while C-peptide 1.8nmol/L Diagnosis?

a. Insulinoma
b. Self-administering insulin
c. Glucagonoma
d. Fasting hypoglycemia

Ans: **A**

275. A young lady has history of repeated attacks of nocturnal fits, light headiness and diplopia for last one month. when investigated, her fasting BSR (blood sugar report) on 3 consecutive days was 5mmol/L, 4 mmol/L, 6mmol/L her C- peptide level was found 2.5 nmol/L, the most appropriate diagnosis is:

a. Insulinoma
b. Glucagonoma
c. Self- administration of insulin

Ans: **A**

276. A chief complaint of weight gain and fasting hypoglycaemia. her C – peptide level was 1.87 and blood glucose was 67mg/dL. what is your diagnosis?

a. Insulinoma
b. Acromegaly
c. MODDY
d. Hepatoma
e. None of the above

Ans: **A**

277. A Nurse student presented with confusion and sweating, RBS 40 mg/dL. The patient sister is an insulin-dependent diabetic. Further the patient is found to have high insulin levels and a low C peptide level. The most likely diagnosis is

a. Reactive hypoglycemia
b. Early diabetes mellitus
c. Factitious hypoglycemia
d. Insulinoma
e. Hypokalemia

Ans: **C**

Radiant Notes

Insulinoma

- An insulinoma is a neuroendocrine tumour
- Deriving mainly from pancreatic Islets of Langerhans cells
- Most common pancreatic endocrine tumour
- Features:
  - Whipple triad.
    - Hypoglycemic symptoms brought on by fasting.
    - Blood glucose <50 mg/dL during symptomatic attack
    - Glucose administration brings relief of symptoms.
  - Hypoglycaemia: typically, early in morning or just before meal, e.g. diplopia, weakness etc.
  - High insulin, **raised proinsulin: insulin ratio**
  - **High C-peptide**
- Diagnosis:
  - Supervised, prolonged fasting (up to 72 hours)
  - CT pancreas
- Management:
  - Surgery
  - Diazoxide and somatostatin if patients are not candidates for surgery

The normal range for fasting blood C-peptide levels is around 0.8 – 3.85 ng/mL or 0.26 – 1.27 nmol/L (260 – 1270 pmol/L). Ranges can vary between laboratories.

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278. Which of the following is responsible for the release of vasopressin?
- a. Increase CSF pressure
- b. Calcium level in CSF
- c. Volume receptors in left atrium

Ans: **C**

---

279. A 14-year girl with hypoglycemia, hypotension and increased with facial hair growth?
- a. Congenital adrenal hyperplasia
- b. Congenital hypertrichosis
- c. Obesity

Ans: **A**

---

280. An obese Pt having HTN, DM, Raised TG , BMI 32 what is most likely Dx?
- a. Cushing syndrome
- b. Metabolic syndrome
- c. Cushing disease
- d. PCOS

Ans: **B**

---

281. An obese female having BMI 41 kg /m2 . what will be the metabolic abnormality in this patient?
- a. Hypertriglyceridemia
- b. Hypercapnia
- c. Hyperinsulinemia

Ans: **A**

---

282. In metabolic syndrome, all are true except:
- a. HTN
- b. Hyperlipidemia
- c. Insulin resistance
- d. Obesity
- e. raised HDL

Ans: **E**

---

283. In obstructive sleep apnea, all are true except
- a. Impotence
- b. Poor concentration
- c. Somnolence
- d. HTN
- e. Obesity

Ans: **A**

---

284. A diabetic, obese female patient presents to you in OPD. She has complained of excessive daytime sleepiness, diagnosis?
- a. Narcolepsy
- b. Uncontrolled DM
- c. Hypoglycaemic episodes
- d. OSA

Ans. **D**

---

285. Old diabetic male, hypertensive, alcoholic and extremely obese met an accident three days ago, he complains of excessive day time sleepiness, cause?
- a. OSA
- b. Narcolepsy
- c. Hypoglycemia
- d. Hypertension

Ans: **A**

---

286. Diabetic male taking insulin, having excessive day time sleepiness and vivid dreams?
- a. Narcolepsy
- b. OSA
- c. Hypoglycemia
- d. Hyperglycemia

Ans: **A**

---

287. A patient had collapse after laugh, reason?
- a. Cataplexy
- b. Narcolepsy
- c. Obstructive sleep apnea

Ans: **A**

Radiant Notes

Metabolic syndrome

- It is thought that the key pathophysiological factor is insulin resistance
- Diagnosis (3 or more of the following should be present)
  - Elevated waist circumference: Men > 102 cm, Women > 88 cm
  - elevated triglycerides: > 1.7 mmol/L
  - Reduced HDL:
  - Raised blood pressure: > 130/85 mmHg, or active treatment of hypertension
  - Raised fasting plasma glucose > 5.6 mmol/L (100), or previously diagnosed type 2 DM
- Other associated features include:
  - raised uric acid levels
  - non-alcoholic fatty liver disease NAFLD
  - polycystic ovarian syndrome PCOS

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Chapter: 5 Nephrology

1. A patient who is diagnosed case of CCF present to you with pain in his hand. He is taking beta blocker, antiplatelet and diuretics. Which drug is responsible for his complaint?
   a. Captopril
   b. Carvedilol
   c. Digoxin
   d. Furosemide
   e. Aspirin

Ans: **D**

2. A patient develops acute tubular necrosis from gentamycin, she was started on diuretics and dopamine, later complains of deafness, drug responsible?
   a. Hydrochlorothiazide.
   b. Dopamine.
   c. Furosemide.
   d. Spironolactone

Ans: **C**

3. A patient takes furosemide, renal effect:
   a. Cast
   b. Chronic Interstitial nephritis
   c. Renal K wasting

Ans: **C**

4. Which of the following diuretics will continue to induce significant diuretics after serum of blood volume to normal level:
   a. Triamterene
   b. Spironolactone
   c. Hydrochlorothiazide
   d. Furosemide

Ans: **D**

5. The most common side effect of loop diuretics is
   a. Hypokalemia
   b. Hyponatremia
   c. Hypocalcemia

Ans: **A**

6. Which of the following is the commonest side effect of furosemide?
   a. Hypokalemia
   b. Hyponatremia
   c. Hypocalcemia
   d. Hypomagnesaemia

Ans: **A**

7. A 55-year-old female, known case of congestive heart failure, develops pain in small joints of her hands. What is the likely culprit drug?
   a. Captopril
   b. Aspirin
   c. Furosemide
   d. Digoxin

Ans: **C**

8. Following is most likely side effect of thiazide diuretics
   a. Increased Serum potassium
   b. Metabolic acidosis
   c. Impotence
   d. Respiratory Alkalosis

Ans: **C**

9. ADH exerts its effect on:
   a. Proximal convoluted tubule
   b. Loop of Henley
   c. Distal convoluted tubule
   d. Collecting ducts

Ans: **D**

10. An old hypertensive diabetic patient male presents to you in clinic with enlargement of his breast tissue. which of the following drug is responsible?
   a. Verapamil
   b. Methyldopa
   c. Amitriptyline
   d. Spironolactone

Ans: **D**

Radiant Notes

- **Thiazide diuretics (hydrochlorothiazide)**
  - Inhibits Na and Cl absorption & Inc Ca++ absorption
  - Thiazide Diuretics acts on early DT
  - Side effects:
    - Hyponatremia, Hypokalemia
    - **Hypercalcemia**
    - ↓ clearance of lithium
    - **Hyperuricemia**
- **Loop diuretics (Furosemide)**
  - Acts on Thick ascending limb of the loop of Henle inhibit the Na+–K+–2Cl- cotransporter
  - Side effects: (Mnemonic--- Loops Lose Ca2+.)
    - Hyponatremia, Hypokalemia, **Hypocalcemia**
    - Ear- toxicity. deafness
    - **Hyperuricemia (Gout & joint pain)**
    - **Dehydration**
- **K+ sparing diuretics (Spironolactone, Triamterene, Amiloride)**
  - Dec Na+ reabsorption and Dec K+ excretion
  - K+ sparing diuretics acts on collecting ducts
  - Side effects: (Mnemonic--- The K+ STAys)
    - **Hyperkalemia**
    - **Gynecomastia**
    - **Pancreatitis**

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11. Which is the most important finding of pre renal azotemia?

a. Urine creatinine/serum creatinine 30:1
b. Urine osmolarity > 350
c. Urine Na+ <20
d. Fractional urea excretion = 20%

Ans: C

12. Which one of the following favours acute tubular necrosis diagnosis?

a. Urine sodium <20%
b. Inc urine output with fluids
c. Fractional sodium excretion > 2%

Ans: C

13. A 69 years old female presents with untreated CCF for very first time in emergency department. urinalysis and urine biochemistry are most likely to show which of the following.

a. Increased urine Na+
b. Decreased urine Na+
c. Proteinuria.
d. Specific gravity decreased.

Ans: B

14. The patient in chemotherapy should be hydrated to prevent:

a. Drug over dose
b. Hypernatremia
c. Acute renal failure
d. Hypercalcemia
e. Dehydration

Ans: C

15. A patient in ICU had decrease urinary output, dry mouth, her urine to plasma urea ratio >45 cause

a. Pre renal azotemia
b. Intrinsic Renal azotemia
c. Post renal

Ans: A

16. A patient admitted in CCU for many days. Developed oliguria. His urine to plasma urea ratio is less than 5. Urea & creatinine are raised. Cause?

a. Acute tubular necrosis
b. Pre-renal Uraemia
c. Post renal Uraemia

Ans: A

17. Which of the following is least likely cause of acute renal failure?

a. Cyclosporine toxicity
b. Intravascular hemorrhage
c. Rhabdomyolysis
d. Dehydration

Ans: B

18. Which of the following drug needs major reduction in dose in acute renal failure?

a. Ciprofloxacin
b. Cefixime
c. Gentamycin
d. Vancomycin

Ans: C

19. A question of RTA and young boy had severe lower limbs injury, then he developed ARF. What is the cause?

a. Hypotension
b. Rhabdomyolysis

Ans: B

20. A patient with diarrhea and vomiting is found to have a raised urea and creatinine. most likely mechanism of renal failure is:

a. Post renal failure.
b. Pre renal failure.
c. Acute tubular necrosis
d. Glomerulonephritis

Ans: B

Radiant Notes

Acute Kidney Injury (Acute Renal Failure)

- **Causes**
  - Pre- renal causes of ARF
    - Heart failure, Blood loss, Fluid loss, Renal artery stenosis or occlusion
  - Intrinsic renal causes of ARF
    - Acute tubular necrosis
    - Interstitial disease
    - Rhabdomyolysis and hemoglobinuria
    - Contrast agents, aminoglycosides (Gentamycin), cisplatin, amphotericin, cyclosporine, and NSAIDs:
  - Post- renal causes of ARF
    - Obstruction because of Stones, Tumors, Inflammation, Prostate enlargement
- **Comparison between Prenal, Intrinsic and Post Renal Causes Of ARF**
  - Prerenal causes------*in these kidneys hold on to sodium to preserve volume*

	Pre-Renal	Intrinsic	Post-Renal
Urine osmolality (mOsm/kg)	> 500	< 350	< 350
Urine Na+ (mEq/L)	< 20	> 40	> 40
FE_{Na}	< 1%	> 2%	< 1% (mild) > 2% (severe)
Serum BUN/Cr	> 20	< 15	Varies

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21. The most common cause of Chronic kidney disease is:

a. Hypertension.
b. Diabetes mellitus
c. Obstructive uropathy
d. Glomerulonephritis

Ans: **B**

22. A patient suffering from chronic kidney disease, which type of Anemia is seen in Uremia

a. Microcytic hypochromic anemia
b. Microcytic hyperchloremic anemia
c. Macrocytic anemia
d. Normochromic normocytic anemia

Ans: **D**

23. In chronic renal failure, vitamin D deficiency occurs in which form?

a. 1 hydroxy cholecalciferol
b. Alpha 1 dihydroxy cholecalciferol
c. 1,25 dihydroxy-cholecalciferol
d. 25 dihydroxy-cholecalciferol

Ans: **C**

24. What is the underlying mechanism of renal osteodystrophy in chronic renal failure?

a. Hyper parathyroid bone disease
b. Vitamin D deficiency
c. Osteoporosis
d. Osteosclerosis
e. Hyperphosphatemia

Ans: **A**

25. In Chronic kidney disease patient, cause of renal osteodystrophy?

a. Def of 1, 25 vit D
b. Erythropoietin deficiency
c. Proteinuria
d. Calcium deficiency

Ans: **A** (Both Que 24 and 25 have came in previous papers with different options—)

26. A 58yr old Diabetic Patient developed bone pain in his hands. On exam, no joint abnormalities were noticed. His labs were: Serum Ca++ 7.8 Serum PO4+ 5.7 Serum Creatinine was 7.8. What is the most likely cause of his complains?

a. Hyperparathyroidism
b. Treatment with alpha-calcidiol
c. Osteopetrosis

Ans: **A**

27. Primary cause of anemia in patients with CKD

a. Iron deficiency
b. Insufficient erythropoietin production
c. Bone marrow fibrosis

Ans: **B**

Radiant Notes

Nephrology

Complications & Treatment of Renal failure

Complications	Treatment
Anemia: (normochromic, normocytic anemia).	Erythropoietin replacement and iron supplementation
Hypocalcemia: o The kidney transforms the less active 25-hydroxy-vitamin D into the much more active 1,25-dihydroxy-vitamin D. Osteodystrophy: o Low calcium leads to secondary hyperparathyroidism. High parathyroid hormone levels remove calcium from bones, making them soft and weak.	Replace vitamin D and calcium
Bleeding: o Platelets do not work normally in a uremic environment.	DDAVP (Desmopressin) increases platelet function; use only when bleeding
Hyperphosphatemia: o Phosphate is normally excreted through kidneys. High PTH levels release phosphate from bones, but the body is unable to excrete it.	Oral phosphate binders
Hyperkalemia	10mL of 10% calcium gluconate Intravenous insulin + glucose: Salbutamol nebulizers If venous bicarbonate low (i.e. patient is acidotic) giving IV sodium bicarbonate
Pulmonary oedema (Mnemonic **LMNOP**)	**L**oop diuretics, **M**orphine, **N**itrates (e.g. IV GTN) **O**$_2$ high-flow **P**osition (sit the patient up—decreases pre-load)

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28. A patient with CRF having anemia. the treatment of anemia in CRF is?
    a. Methotrexate
    b. Dialysis
    c. EPO injection
    d. Blood transfusion

Ans: C

29. A patient previously normotensive after one week of Hemodialysis doesn't have control on BP but he is compliant in medicine like ferrous sulphate, erythropoietin, etc, his BP is 180/110 which of the following is responsible for worsening BP?
    a. Vit D analogs
    b. Erythropoietin
    c. Alpha-calcidiol
    d. Furosemide

Ans: B

30. All are side effects of erythropoietin except?
    a. Bone aches
    b. Hypertension
    c. Pure red call aplasia
    d. Long bone fractures

Ans: D

31. Scenario of CSS syndrome patient who developed CKD. What bone complication is likely to occur?
    a. Osteopetrosis
    b. Osteitis fibrosa cystica
    c. Paget disease

Ans: B

32. A 65-year-old woman on hemodialysis for CRF requires urgent dental extraction. Which agent would be administered to reduce significant risk of bleeding?
    a. Desmopressin
    b. Conjugated estrogen
    c. Erythropoietin
    d. Fresh frozen plasma
    e. Aminocaproic acid

Ans: A

33. CKD patient needs tooth extraction. How to stop bleeding if desmopressin is unavailable
    a. FFPs
    b. Platelets
    c. Conjugated estrogen
    d. Vitamin K

Ans: C

34. How to treat a case of renal failure associated with coagulopathy?
    a. Methylprednisolone.
    b. Dialysis.
    c. Desmopressin
    d. Plasmapheresis.

Ans: C

35. 55-year-old known case of CKD has ECG which shows ST depression and tall T waves. What is the diagnosis?
    a. Acute pericarditis due to uremia
    b. Hyperkalemia
    c. Hypocalcemia
    d. Hypomagnesemia

Ans: B

36. Which one of the following is correct Treatment of acute pulmonary edema?
    a. IV Nitrates plus IV furosemide
    b. Oral nitrate plus IV furosemide
    c. IV nitrate plus oral furosemide

Ans: A

37. CKD patient with severe hypocalcemia Ca++ level less than 5mg/dL, drowsy but arousable, next step?
    a. Correct Calcium during dialysis
    b. Correct calcium with IV before dialysis

Ans: B

38. An ECG of patient shows absent P wave and wide QRS complex, he is suffering from:
    a. Hypocalcemia
    b. Hypercalcemia
    c. Hypomagnesemia
    d. Hypokalemia

Ans: D

39. A Patient presents with severe Hyperkalemia in order to prevent him from arrythmias, what would you give?
    a. IV calcium gluconate
    b. IV Insulin + Glucose
    c. IV MgSO4

Ans: A

40. A 45-year-old man with essential hypertension presents to the emergency department with muscle weakness and palpitations. Peaked T waves and prolonged PR Intervals are noted on ECG. Which of the following medications could be the underlying cause of the changes noted on this patient's ECG?
    a. Acetazolamide
    b. Furosemide
    c. Hydrochlorothiazide
    d. Spironolactone

Ans: D

41. An ICU admitted patient of CKD developed tall tented T-waves and broad QRS complexes on ECG. What should be done immediately?
    a. Serum electrolytes
    b. ABGs
    c. CBC
    d. Echocardiography

Ans: A

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42. A patient with acute MI developed oliguria and uremia. His K levels are raised Bp: 90/60. pulse 100/min. respiratory rate 35/min. Best treatment modality in this case:

a. Glucose and insulin
b. Peritoneal dialysis
c. K sparing drugs
d. Dietary K restriction

Ans: B

43. An old diabetic hypertensive patient presents to you in nephrology clinic with neuropathy, pain and paresthesia. his labs show Hb 7.2 gm/ dl. Creatinine 9 mg/dl urea 180mg/ dL. what will be your advice?

a. Insulin therapy
b. Vit b12 replacement
c. Iron replacement therapy
d. Dialysis

Ans: D

44. Peritoneal dialysis is best in

a. Fatty man with massive ascites
b. LV dysfunction post MI
c. Elderly with DM
d. Bleeding diathesis

Ans: B

45. Peritoneal dialysis is contraindicated in

a. Ascites
b. Pneumonia
c. Old age
d. LVF

Ans: A

46. Peritoneal dialysis is preferred over hemodialysis in:

a. Due to bleeding disorders
b. Left ventricular failure with hypotension
c. Cirrhosis and ascites
d. Patient's preference

Ans: B

47. Patient with renal failure. Which one of the following is an indication for dialysis?

a. Creatinine 6.5mg/dL
b. Pericardial rub
c. Urine output 10mL

Ans: B

48. Contraindication of peritoneal dialysis

a. Bleeding disorder.
b. Anemia.
c. Hypotension

Ans: A

49. Contraindication to hemodialysis?

a. Diastolic BP greater than 120
b. Systolic BP less than 100
c. CrCl < 30 ml/min

Ans: B

50. Peritoneal dialysis is Superior to hemodialysis in which of the following condition?

a. Bleeding diathesis
b. LVF

Ans: B

51. A patient undergoing dialysis went for AV fistula formation, on investigation BT 18 sec, what will you do next?

a. Stop aspirin & post pone surgery for 2 weeks.
b. Stop aspirin and advise for surgery now
c. Continue aspirin and advise for surgery now

Ans: A

Radiant Notes

Dialysis

- Indication for dialysis: (Mnemonic -AEIOU)
  - Acidosis (pH <7.1)
  - Electrolyte imbalance (refractory K+>6.5)
  - Intoxication
  - Overload (fluid)
  - Uremia (encephalopathy, pericarditis)
- **Haemodialysis**
  - Is usually done intermittently and allows good clearance of solutes in short periods but requires the patient to be **hemodynamically stable.**
  - If patients are stable enough for ward-based care this is usually the modality of choice.
  - Complications:
    - Hypotension
    - Access problems (arteriovenous fistula: thrombosis, stenosis)
- **Peritoneal dialysis**
  - Uses the peritoneum as a semi-permeable membrane.
  - It is simple to perform, can be carried out continuously and at home, and so allows the patient more freedom
  - Complications
    - Peritonitis (Staphylococcus epidermidis Is the most
    - common cause. Staphylococcus aureus is another common cause)
    - Hyperglycemia—especially with diabetic patients.
    - Protein malnutrition.

Nephrology

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52. A patient underwent renal transplant about 2 months back and since then he is on azathioprine and cyclosporine. which is the least likely to occur within 2 months?

a. Nephrotoxicity
b. Bone marrow suppression
c. Opportunistic infections
d. Lymphoproliferative disorder.
e. Transplant rejection.

Ans: D

53. If a person donates his kidney which of the following parameters will be decreased in the donor?

a. Serum creatinine
b. Serum urine
c. Creatinine clearance

Ans: C

54. Absolute Contraindication to renal biopsy?

a. Uncontrolled HTN
b. Solitary kidney
c. Azotemia
d. Obesity

Ans: A

55. Most common infection after renal transplant

a. CMV
b. HIV
c. Hepatitis B

Ans: A

56. After renal transplant which GN has higher rate of recurrence

a. Glomerular basement membrane nephritis
b. FSGC
c. Minimal change disease
d. Membranous glomerulonephritis

Ans: B (if Membranoproliferative glomerulonephritis in options prefer that)

57. CKD PT on dialysis with AV-fistula on his arm, having pain in hand, it is due to

a. Renal amyloidosis
b. Nerve compression due to AV-fistula

Ans: A

58. 12-year boy with frothy urine and heaviness of eyes in morning, Diagnosis?

a. Malnutrition
b. Nephrotic syndrome
c. Nephritic syndrome
d. Genital TB

Ans: B

59. A patient presented with HTN, proteinuria and edema. There are oval fat bodies on urine analysis. What is the diagnosis

a. Nephritic syndrome
b. Nephrotic syndrome
c. Genitourinary TB
d. Protein losing nephropathy

Ans: B

60. Which is the most specific cast for glomerulonephritis?

a. RBC cast
b. Granular cast
c. Hyaline cast
d. White cell cast

Ans: A

61. Young patient with General facial puffiness. On examination BP 155/90. Urine exam shows fatty oval cell, what is the most likely diagnosis?

a. Nephrotic syndrome
b. Nephritic syndrome
c. Obstructive uropathy.
d. Interstial nephritis

Ans: A

62. Pt with HTN oliguria, urine exam reveals eosinophilic cast, diagnosis?

a. Nephritic syndrome
b. Nephrotic syndrome
c. Acute tubular necrosis
d. Acute interstitial nephritis

Ans: D

63. Decreased urinary chloride occurs in which condition?

a. Thiazide use
b. Vomiting
c. Dehydration
d. Diabetic ketoacidosis

Ans: B

Radiant Notes

Casts in Urine

❖ Bladder cancer, kidney stones→ hematuria, no casts.
❖ Acute cystitis → pyuria, no casts.

RBC cast	Glomerulonephritis
WBC cast	Pyelonephritis
Eosinophil	Acute (allergic) interstitial nephritis
Fatty casts ("oval fat bodies")	Nephrotic syndrome
Broad, waxy cast	Chronic renal disease
Granular "muddybrown" cast	Acute tubular necrosis

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Next Few MCQ's are based on this Theory

Radiant Notes

Nephrotic syndrome

- Includes a group of conditions characterized by increased basement membrane permeability
- Characteristic features:
  - Massive proteinuria (daily loss of ≥ 3.5 grams of protein per day).
  - Hypoalbuminemia (serum albumin less than 3 g/100 mL)
  - Generalized edema.
  - Hyperlipidemia and hypercholesterolemia are caused by increased hepatic lipoprotein synthesis

- **Causes**
  - **Primary glomerular disease**: Minimal change disease, Membranous GN, Focal segmental glomerolosclerosis
  - **Systemic diseases**: SLE, Amyloidosis, Diabetic nephropathy

Minimal change disease (lipoid Nephrosis)	❖ Most common cause of Nephrotic syndrome in children ❖ Light microscopy → normal-appearing glomeruli. ❖ Electron microscopy → disappearance or fusing of epithelial foot processes. ❖ **Excellent response to corticosteroids** ❖ Associations: o Hodgkin's lymphoma, thymoma, infectious mononucleosis
Membranous nephropathy (membranous glomerulonephritis)	❖ Most common cause of Nephrotic syndrome in adults ❖ Light microscopy → diffuse capillary and **GBM thickening** ❖ Electron microscopy → spike and dome" appearance with Subepithelial deposits. ❖ Poor response to corticosteroids ❖ Associations: o **SLE (10%), hepatitis B**, syphilis, malaria infection; drugs (gold salts or penicillamine); or **malignancy.** o **The disorder sometimes causes renal vein thrombosis, because of loss of antithrombin III, protein C and S & ↑ fibrinogen**
Focal segmental glomerolosclerosis	❖ It is more common in African Americans and is **associated with HIV.** ❖ It is characterized by sclerosis of some glomeruli, in these affected glomeruli only a portion of capillary tuft is involved ❖ Light Microscopy→segmental sclerosis ❖ Electron Microscopy→ effacement of foot process/Podocyte effusion (same as Minimal change disease, but minimal change > focal segmental sclerosis)
Diabetic nephropathy	❖ ↑ in mesangial matrix → two patterns: o Diffuse glomerulosclerosis → diffusely increase in mesangial matrix. o Nodular glomerulosclerosis → nodular accumulations of mesangial matrix material (**Kimmelstiel-Wilson nodules**). ❖ Electron microscopy →↑ in thickness of the glomerular basement membrane
Renal Amyloidosis	❖ Amyloidosis refers to accumulation of insoluble fibrillar proteins that form β-pleated sheaths, two types ❖ Light Microscopy—**Congo red stain shows apple-green birefringence** (see table below) ❖ **Beta-2 microglobulin amyloidosis: associated with patients on renal dialysis**

Primary (AL) amyloidosis	Secondary (AA) amyloidosis
Most common → in developed world.	Less common in developed countries
Due to deposition of proteins from Ig Light chains	Occurs in patients with long-standing neoplasia or inflammation and is associated with serum amyloid protein called AA protein
Can occur as a plasma cell disorder or associated with multiple myeloma and Waldenstrom's macroglobulinemia	**It is often seen in concert with tuberculosis, leprosy, RA**

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Nephrology

64. A young male with periorbital swelling presents to you. He is pale and has bilateral edema. Investigation reveals proteinuria and dyslipidaemia. What is the likely diagnosis?

a. Nephrotic syndrome
b. Nephritic syndrome
c. Hyperviscosity syndrome

Ans: **A**

65. Most common cause of edema in nephrotic syndrome?

a. Hyperkalemia
b. Hyperalbuminemia
c. Lymphatic obstruction
d. Increased capillary permeability
e. Increased hydrostatic pressure of blood

Ans: **D**

66. Which one of the following is associated with nephrotic syndrome?

a. Increased Serum Protein
b. Increased cholesterol
c. Increased albumin

Ans: **B**

67. A patient with generalized edema, low Hb & raised cholesterol. Disease?

a. Nephrotic
b. Nephritic

Ans: **A**

68. Heavy chain proteinuria occurs because of?

a. Reduced ultrafiltration
b. Glomerular damage
c. Afferent vasoconstriction
d. Tubular damage

Ans: **B**

69. Which one of the following is responsible for DVT in nephrotic syndrome?

a. Haemoconcentration
b. Dyslipidaemia
c. Loss of antithrombin III
d. Pedal edema

Ans: **C**

70. A patient was started on Antituberculosis treatment, later presented with nephrotic syndrome, which drug is responsible for it?

a. Isoniazid
b. Rifampicin
c. Pyrazinamide
d. Amikacin

Ans: **B**

71. Most common cause of nephrotic syndrome in children's?

a. Minimal change disease
b. Membranous nephropathy
c. Focal segmental glomeroloscelorosis
d. Amyloidosis

Ans: **A**

72. Which one of the following is the most common primary cause of nephrotic syndrome in adults?

a. Minimal change disease
b. Membranous glomerulonephritis
c. Focal segmental glomeroloscelorosis
d. Amyloidosis

Ans: **B**

73. Which Glomerular disease is best responsive to steroids?

a. Membranous Glomerulonephritis
b. Rapidly progressive glomerulonephritis
c. Membranoproliferative Glomerulonephritis
d. Minimal change disease

Ans: **D**

74. Thickening of Glomerular basement membrane is a characteristic feature of

a. Minimal change disease
b. Membranous Glomerulonephritis
c. Rapidly progressive glomerulonephritis
d. Membranoproliferative Glomerulonephritis

Ans: **B**

75. A Patient renal biopsy was done, on microscopic examination thickening of capillary wall was present which is a characteristic feature of

a. Minimal change disease
b. Membranous Glomerulonephritis
c. Rapidly progressive glomerulonephritis
d. Membranoproliferative Glomerulonephritis

Ans: **B**

76. A patient with features of nephrotic syndrome but normal microscopic findings?

a. Crescentic glomerulonephritis
b. Membranoproliferative Glomerulonephritis
c. Minimal change disease

Ans: **C**

77. Young boy with selective proteinuria but no hypertension?

a. Minimal change disease
b. Membranous Glomerulonephritis
c. Rapidly progressive glomerulonephritis
d. Membranoproliferative Glomerulonephritis

Ans: **A**

78. The most common lesion of kidney in SLE is

a. Diffuse proliferative glomerulonephritis
b. Focal segmental glomerulonephritis
c. Membranous glomerulonephritis
d. Minimal change

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e. Tuberous sclerosis

Ans: A

79. Cause of microscopic hematuria, with normal renal function

a. IgA nephropathy
b. Minimal change disease
c. Renal cell carcinoma

Ans: B

80. Patient complaining of sore throat was found to have nephrotic range proteinuria 5.5 g/24hr. responded well to steroid 60mg/day withing a week, Diagnosis?

a. Minimal change disease
b. Membranous GN
c. RPGN
d. Nephritic syndrome
e. Post streptococcal glomerulonephritis

Ans: A

81. A 6-year-old boy with sore throat infection few weeks ago presented with peri orbital swelling. BP normal, investigations decreased albumin and increased cholesterol. Kidney biopsy was done which was normal. The patient was treated with steroids and recovered Which of the following is the most likely diagnosis?

a. Acute nephritic syndrome
b. Acute pyelonephritis
c. Minimal change disease
d. Postinfectious glomerulonephritis

Ans: C

82. A patient diagnosed as Hepatitis B presented with features of nephrotic syndrome, which one of the following is associated with hepatitis B?

a. Minimal change disease
b. Membranous glomerulonephritis
c. Focal segmental glomeroloscelorosis
d. Amyloidosis

Ans: B

83. Which one of the following is least recognized as a cause of membranous glomerulonephritis?

a. Hepatitis B
b. Cryoglobulinemia
c. Malaria
d. Lymphoma

Ans: B

84. Most common organ involved in amyloidosis is:

a. Heart
b. Kidney
c. Rectum

Ans: B

85. A patient presents to you with features of heart failure, proteinuria. hepatomegaly and decreased sexual function. diagnosis?

a. Hemosiderin
b. Hemochromatosis
c. Nephrotic syndrome
d. Amyloidosis

Ans: D

86. 58-year-old known case of Rheumatoid Arthritis develops nephrotic syndrome. What is the cause?

a. Primary Amyloidosis
b. Secondary Amyloidosis
c. HIV Co-Infection
d. Renal cell carcinoma

Ans: B

87. Most common glomerular disease in HIV patients?

a. Minimal change disease
b. Membranous GN
c. RPGN
d. Focal segmental glomeroloscelorosis
e. Post streptococcal glomerulonephritis

Ans: D

88. A diabetic patient with HbA1c 7.5, Bp 130/80, urine D/R showed protein +2, Which statement is more correct?

a. Do not start Anti-HTN now
b. Patient has less chance of developing renal failure
c. Renal biopsy will show glomerulosclerosis
d. Blood sugars are controlled

Ans: C

89. A 60-year-old man known case of diabetes for last 20 years now presented with rapidly progressive renal failure. The most likely feature in this patient would be

a. Amyloidosis
b. Kimmelstiel-Wilson nodules
c. Diffuse glomerulosclerosis
d. Urinary tract infection
e. Arteriosclerosis

Ans: B

90. A patient of chronic renal failure on dialysis for many years developed carpal tunnel syndrome, cause?

a. Dialysis related amyloidosis
b. Acromegaly
c. Hyperparathyroidism

Ans: A

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Nephrology

Next few MCQS's are based on this theory

Radiant Notes

Nephritic syndrome

- (Nephritic) inflammatory rupture of the glomerular capillaries, with resultant bleeding
- Characterized features: (A HOPE)
  - Azotemia Hematuria, Hypertension, Oliguria, Proteinuria (less than 3g/day), Edema

Acute post streptococcal glomerulonephritis	❖ Most common type of post-infectious glomerulonephritis in children's ❖ Occurs 1–4 weeks after a sore throat caused by group A β-hemolytic streptococci i.e. streptococcus pyogenes ❖ Type III hypersensitivity reaction. ❖ Clinical features: o Sudden onset of fever, oliguria, **hematuria (cocoa-coloured urine)** ❖ Findings: o **Serum C3 decreased** o **ASO titers elevated** o Light microscopy→ glomeruli enlarged and hypercellular o Electron microscopy→ Subepithelial humps o Immunofluorescence→ lumpy bumpy appearance
Rapidly progressive (crescentic) glomerulonephritis	❖ Nephritic syndrome that progresses rapidly to renal failure within weeks or months ❖ Light microscopy & Immunofluorescence → **Crescent shape glomerulonephritis** ❖ Disease processes that may result in this pattern are (see table below)
IgA nephropathy (Berger disease)	❖ Most common type of nephritic syndrome overall and is due to deposition of IgA in the mesangium ❖ **It presents with recurrent episodes of hematuria following upper RTI, GI infections, occurs 1-2 days after infection** ❖ Associations: o coeliac disease/dermatitis herpetiformis o **Henoch-Schonlein purpura** Classic Triad: ▪ **Skin: palpable purpura on buttocks/legs** ▪ **Arthralgias** ▪ **GI: abdominal pain** ❖ Light microscopy→ mesangial expansion ❖ Immunofluorescence→ granular mesangial IgA and lambda light chain deposition ❖ Not to be confused with Buerger disease (Thromboangiitis obliterans).
Alport syndrome	❖ **Most commonly X-linked dominant.** ❖ Defective glomerular basement membrane synthesis due to abnormal collagen type IV ❖ Clinical features: Mnemonic: "can't see, can't pee, and can't hear a bee." o Eye problems (e.g., retinopathy, lens dislocation) o Glomerulonephritis o Sensorineural deafness ❖ Electron microscopy→ **"Basket-weave" appearance.**

Rapidly progressive glomerulonephritis — disease processes:

Goodpasture syndrome	Wegener's glomerulonephritis
o Type II hypersensitivity reaction caused by antibodies against GBM and alveolar basement membrane o **IgG deposits on renal biopsy**	o It is necrotizing medium sized small vessel vasculitis
o Involves lung and renal vessels	o Involving upper respiratory tract, lung and renal vessels
o Hemorrhagic pneumonitis (pneumonia plus hemoptysis) o Nephritic syndrome	o Sinusitis, otitis media o Hemorrhagic pneumonitis (pneumonia plus hemoptysis) o Nephritic syndrome

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91. A young boy with history of sore throat now develops pain in the joints. The investigation of choice in the case is?
- a. Complete blood count
- b. ECG
- c. ASO titer
- d. ECHO
- e. X-ray Knee

Ans: **C**

---

92. Type of hypersensitivity reaction in post streptococcal glomerulonephritis
- a. Type 1
- b. Type 2
- c. Type 3
- d. Type 4

Ans: **C**

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93. A 7 years old school going boy develops sore throat. He received antibiotic for it, which resolved it, following 2 weeks, later he developed generalized body Edema, Hypertension and Hematuria. The most likely diagnosis is
- a. Acute post streptococcal glomerulonephritis
- b. Goodpasture's syndrome
- c. Henoch-Schonlein purpura
- d. Minimal change disease

Ans: **A**

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94. A 4-year boy is brought in by his mother after she discovers that his urine is now a dark Coca-Cola color. he reports that he saw doctor 10 days ago because he was complaining of a sore throat, but he has otherwise been well. What is the most likely diagnosis?
- a. Alport's syndrome
- b. Goodpasture's syndrome
- c. Henoch-Schonlein purpura
- d. Minimal change disease
- e. Post-streptococcal glomerulonephritis

Ans: **E**

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95. Acute Glomerulonephritis is usually
- a. Immunoglobulins mediated.
- b. Secondary to vasculitis.

Ans: **A**

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96. Which types of Glomerulonephritis is associated with streptococcal infection in children?
- a. Focal segmental glomerulosclerosis.
- b. Mesangiocapillary GN
- c. Membranous GN
- d. Diffuse proliferative GN

Ans: **D**

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97. Young boy presented with abdominal pain and palpable bruises on buttocks, some urinary problem as well, diagnosis?
- a. Acute leukemia
- b. ITP
- c. TTP
- d. Henoch-Schonlein purpura

Ans: **D**

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98. Henoch Schonlein purpura is usually seen in?
- a. Childhood
- b. Adolescence
- c. Middle age
- d. Old age

Ans: **A**

---

99. A young girl with history of joint pain, rash on legs and buttocks and hematuria?
- a. Hemolytic uremic syndrome
- b. Henoch-Schonlein purpura
- c. Minimal change disease
- d. Wegener granulomatosis

Ans: **B**

---

100. Middle age male with history of celiac disease presented in OPD due to visible hematuria. What is the most likely diagnosis?
- a. Diffuse proliferative glomerulonephritis
- b. Minimal change disease
- c. Rapidly progressive glomerulonephritis
- d. IgA nephropathy
- e. Membranous glomerulonephritis

Ans: **D**

---

101. A 21-year-old man presented with complains of visible haematuria 2 days after upper respiratory infection, diagnosis?
- a. Minimal change disease
- b. IgA nephropathy
- c. Rhinovirus-associated nephropathy
- d. Post-streptococcal glomerulonephritis

Ans: **B**

---

102. A 40 years old female presents to you with history of cough, hemoptysis and blood in urine. The diagnosis that comes into your mind will be:
- a. Wegener Granulomatosis
- b. Mucormycosis
- c. Bladder CA
- d. Renal cell carcinoma
- e. Lung carcinoma

Ans: **A**

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103. A patient has hemoptysis, hematuria & glomerulonephritis. The most probable diagnosis is
- a. Good pasture syndrome
- b. Legionella pneumonia
- c. Wegener granulomatosis
- d. Churg Strauss syndrome
- e. Sarcoidosis

Ans: A

104. A 30yr old female with saddle nose, granulomatous perforating lesion of nasal septum, vasculitis & proteinuria. The most likely lesion is
- a. Good pasture syndrome
- b. Wegener granulomatosis
- c. Churg Strauss syndrome
- d. Sarcoidosis

Ans: B

105. 58-year-old alcoholic with history of cough, hemoptysis and frank hematuria. What is the diagnosis?
- a. Wegener's granulomatosis
- b. Lung cancer
- c. Renal cell carcinoma
- d. Bladder ca

Ans: A

106. A patient with presented with shortness of breath, chest pain, hemoptysis & hematuria, diagnosis?
- a. Wegener's granulomatosis
- b. Good pasture syndrome
- c. Myocardial infarction

Ans: B

107. 35-year young female patient bring report showing Linear IgG deposits on renal biopsy blood pressure of 190/110 urine R/E shows scant RBC's and proteinuria positive. Diagnosis?
- a. Diabetes mellitus
- b. Lupus nephritis
- c. Nephritic syndrome
- d. Nephrotic syndrome

Ans: B (No option of Goodpasture syndrome)

108. A 16 years old guy feels difficulty in hearing since childhood. now Ans: he presented with renal failure. What do you think he will have?
- a. Alport syndrome
- b. Down syndrome
- c. Anti GBM disease.
- d. Nephritic syndrome.
- e. Nephrotic syndrome

Ans: A

109. A 15-year-old boy suffering from a renal disease that affects the males in his family, presents with hematuria. He also has vestibular nerve defect causing deafness and corneal dystrophy. Urine examination shows protein 1+. Renal biopsy on EM reveals GBM attenuation, with splitting and lamination of lamina densa. The most probable diagnosis is
- a. Acute tubular necrosis.
- b. Berger disease.
- c. Membranous glomerulonephritis.
- d. Diabetic nephropathy.
- e. Alport syndrome.

Ans: E

110. Young male presents with sensorineural deafness and hematuria. There is family history deafness. What test will you perform to confirm your diagnosis?
- a. Audiometry
- b. Anti GBM antibodies
- c. Urine DR
- d. Renal biopsy

Ans: D

111. Alport syndrome is due to which collagen abnormality?
- a. Type I
- b. Type II
- c. Type III
- d. Type IV

Ans: D

112. Young male presents with sensorineural deafness and hematuria. There is family history deafness. What test will you perform to confirm your diagnosis?
- a. Anti GBM antibodies
- b. Urine DR
- c. Audiometry
- d. Renal biopsy

Ans: D

113. Which one of the following types of glomerulonephritis is most characteristically associated with good pasture's syndrome?
- a. Diffuse proliferative glomerulonephritis
- b. Mesangiocapillary glomerulonephritis
- c. Membranous glomerulonephritis
- d. Rapidly progressive glomerulonephritis

Ans: D

114. Crescentic GN, first Investigation
- a. ANCA serology
- b. Complement levels
- c. ASO titre

Ans: A

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115. **A 27-year-old man is investigated for haemoptysis. He is a non-smoker and has no respiratory history of note. Whilst awaiting a bronchoscopy he becomes lethargic and anorexic. Blood tests show the following: Na +141 mmol/L K+5.3 mmol Urea 16.7 mmol/l creatinine 271 pmol/l A renal biopsy is performed and shows linear IgG deposits along the basement membrane. What type of antibodies. Are most likely to cause this type of presentation?**

a. C-ANCA
b. IgA
c. P-ANCA
d. Anti GBM antibodies

Ans: D

116. **Which GN is associated with Very low C3 and normal C4 complement levels?**

a. Good pasture's syndrome
b. Post streptococcal GN
c. Mesangiocapillary GN

Ans: B

117. **Which one of the following features is least commonly seen in drug-induced lupus?**

a. Glomerulonephritis
b. Arthralgia
c. Myalgia
d. Malar rash

Ans: A

118. **Which one of the following causes of glomerulonephritis is associated with normal complement levels?**

a. Post-streptococcal glomerulonephritis
b. Diffuse proliferative lupus nephritis
c. Mesangiocapillary glomerulonephritis
d. Goodpasture's syndrome

Ans: D

119. **Which one of the following types of glomerulonephritis is most characteristically associated with partial lipodystrophy?**

a. Minimal change disease
b. Diffuse proliferative glomerulonephritis
c. Mesangiocapillary glomerulonephritis
d. Membranous glomerulonephritis

Ans: C

120. **Monoclonal cryoglobulinemia is associated with**

a. Hepatitis C
b. Myeloma
c. Mycoplasma

Ans: A

121.

Radiant Notes

Nephritic-Nephrotic syndrome

❖ Severe nephritic syndrome with profound GBM damage that damages the glomerular filtration charge barrier → nephrotic-range proteinuria (> 3.5g/day) and concomitant features of nephrotic syndrome. Can occur with any form of nephritic syndrome, but is most commonly seen with:

- Membranoproliferative glomerulonephritis (MPGN) (also known as Mesangiocapillary glomerulonephritis)
- MPGN is a nephritic syndrome that often co-presents with nephrotic syndrome.

	Type I MPGN "Subendothelial Immune Complex"	Type II MPGN "Dense Deposit Disease"
Mechanism	❖ It results from activation of both classic and alternate complement pathway	❖ It results from activation of only alternate complement pathway ❖ Low C3 levels
Causes	❖ May be 2° to hepatitis B or C infection. ❖ Idiopathic ❖ cryoglobulinaemia	❖ Partial lipodystrophy ❖ Factor H deficiency
H&E stain	❖ Tram track appearance	❖ Tram track appearance
EM	❖ Subendothelial deposits	❖ Intramembranous deposits

Post Streptococcal Glomerulonephritis	IgA nephropathy
❖ Occurs 1-2 weeks after infection	❖ Occurs 1-2 days after infection
❖ C3 levels low	❖ C3 levels normal

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Nephrology

122. What is the most common cause of renal papillary necrosis?

a. Diabetes
b. Hypertension.
c. Nephrolithiasis.
d. Acute pyelonephritis.
e. Obstructive uropathy.

Ans: **A**

123. A diabetic patient presents to you with left flank pain for 3 days, she said that she had been passing blood with urine for last 2 days. now she has no urine output in the last 20 hours. what do you think the diagnosis is?

a. Renal papillary necrosis.
b. Acute pyelonephritis.
c. Acute interstitial nephritis
d. Acute tubular necrosis

Ans: **A**

124. A middle-aged man with significant past history of DM and HTN has complain of fever, sudden pain in right lumbar region and hematuria with rigors and chills. the most appropriate diagnosis is?

a. Acute pyelonephritis
b. Renal vein thrombosis
c. Renal cell CA
d. Acute papillary necrosis

Ans: **D**

125. A middle-aged man diabetic presented with complain of pain in lumbar region and hematuria with rigors and chills from few days. what is the most appropriate diagnosis?

a. Acute pyelonephritis
b. Renal vein thrombosis
c. Renal Cell CA
d. Acute papillary necrosis

Ans: **A**

- ✓ I have included these two questions together so you may know the difference
- ✓ Papillary necrosis can be very hard to distinguish from pyelonephritis
- ✓ Look for the sudden onset of flank pain, fever, and hematuria in causes mentioned in the table---it is papillary necrosis then or if few days then pyelonephritis
- ✓ Urine culture is positive in pyelonephritis and negative in papillary necrosis –other hint
- ✓ Ref: MTB step 2 page 420

Radiant Notes

Acute interstitial Nephritis (tubulointerstitial nephritis)

- Acute interstitial renal inflammation.
- Fever (80%), **Rash (50%), Arthralgias, Eosinophilia and eosinophiluria (80%) occurring after administration of drugs**
- Causes: (Mnemonic: Remember these P'S)
  - Pee (diuretics)
  - Pain-free (NSAIDs)
  - Penicillin's and cephalosporins
  - Proton pump inhibitors
  - RifamPin
  - Other Processes such as autoimmune diseases (eg, Sjögren syndrome, SLE, sarcoidosis).
- The nephritis resolves on cessation of exposure to the inciting drug.

Renal papillary necrosis (necrotizing papillitis)

- Ischemic necrosis of the tips of the renal papillae → gross hematuria and proteinuria.
- May be triggered by recent infection or immune stimulus.
- Associated with: (Mnemonic: SAAD papa with papillary necrosis)
  - Sickle cell disease or trait
  - Acute pyelonephritis
  - Analgesics (NSAIDs)
  - Diabetes mellitus

Acute tubular necrosis

- Is the most common cause of acute renal failure and most common cause of acute kidney injury in hospitalized patients
- **This condition is reversible but if left untreated can be fatal,** especially during initial oliguric phase.
- Key finding: granular ("muddy brown") casts
- Can be caused by ischemic or nephrotoxic injury
- **Ischemic Injury**
  - Secondary to ↓ renal blood flow
  - Examples:
    - Hypotension, shock, sepsis, hemorrhage, HF
- **Nephrotoxic Injury**
  - Secondary to injury resulting from toxic substances.
  - Examples:
    - Aminoglycosides, radiocontrast agents, lead, cisplatin, crush injury (myoglobinuria), ethylene glycol, hemoglobinuria

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126. **Reversible cause of AKI is**
a. Acute tubular necrosis
b. Glomerulonephritis
c. Diabetes mellitus
d. Papillary necrosis

Ans: **A**

127. **A young male was prescribed by a Quack for weight gain and muscle strength now developed oliguria, which of the following is the probable cause?**
a. Acute interstitial nephritis
b. Acute tubular necrosis
c. Glomerulonephritis
d. Papillary necrosis

Ans: **B**

128. **A patient after gastrectomy developed oliguria, urine specific gravity dec, urine urea ratio to plasma urea decreases. Other investigations reveled increased creatinine. Na+ 150, K+ 5.0. Diagnosis?**
a. Dehydration
b. Pre-renal azotemia
c. Acute interstitial nephritis
d. Acute tubular necrosis

Ans: **D**

129. **A patient of liver cirrhosis developed upper GI bleed, investigations were done which showed deranged RFT's and urine Na+ 50mEq/dL, what is your diagnosis?**
a. Acute tubular necrosis
b. Acute interstitial nephritis
c. Hepatorenal syndrome

Ans: **A** (Even though this scenario fits in hepatorenal syndrome as well but in HRS urine Na+ less than 10–15 mEq/dL)

130. **Which of the following is not a complication ATN?**
a. Hyperkalemia
b. Metabolic acidosis
c. Metabolic alkalosis

Ans: **C**

131. **ATN causes most prominent:**
a. Raised K+ levels
b. Initial oliguria
c. Progression to CKD
d. Irreversible

Ans: **A**

132. **Patient was in shock now anuric and serum BUN: Cr is 10, diagnosis?**
a. Hepatorenal syndrome
b. ATN
c. Pre-renal failure

Ans: **B**

133. **Each one of the following is associated with papillary necrosis, except:**
a. Acute pyelonephritis
b. Tuberculosis
c. Chronic analgesia use syphilis
d. Syphilis

Ans: **D**

134. **Most common cause of papillary necrosis is:**
a. Amyloidosis
b. Diabetes
c. Nephrolithiasis

Ans: **B**

135. **Diabetic patient, acute renal deterioration what is cause**
a. Papillary necrosis
b. Acute tubular necrosis
c. Acute interstitial nephritis

Ans: **A**

136. **A diabetic male undergoes coronary angiography. His investigations post angiography shows raised BUN. What is the likely cause?**
a. ATN
b. Nephritic syndrome
c. Cholesterol embolism
d. Contrast induced nephropathy

Ans: **D**

137. **All of the following causes renal papillary necrosis except.**
a. NSAIDS
b. Sickle cell anemia
c. DM
d. Multiple myeloma

Ans: **D**

Radiant Notes

	Pre-Renal	Intrinsic (ATN)
Urine osmolality (mOsm/kg)	> 500	< 350
Urine Na+ (mEq/L)	< 20	> 40
FE_{Na}	< 1%	> 2%
Serum BUN/Cr	> 20	< 15

Nephrology

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138. What is the mechanism of renal injury caused by furosemide?
   a. Glomerulonephritis
   b. Papillary necrosis
   c. Acute interstitial nephritis
   d. Acute tubular necrosis

Ans: C

139. ATT induced renal impairment cause which renal disorder
   a. Interstitial nephritis
   b. Glomerulonephritis
   c. Nephrotic syndrome

Ans: A

140. A patient presents to you in OPD with complain of oliguria, she has been on analgesics for last 6 months due to knee pain. labs show raised urea and creatinine, USG abdomen shows bilateral shrunken kidneys with irregular shape. Diagnosis?
   a. Tubulointerstitial nephritis
   b. Papillary necrosis.
   c. Analgesic nephropathy.
   d. AIN

Ans: C

141. A patient presents to you with rash, decreased urine output, and bilateral flank tenderness, he tells you that some treatment for the fever about 24 hours ago has been taken. What is your diagnosis?
   a. Glomerulonephritis
   b. Papillary necrosis
   c. Acute interstitial nephritis
   d. Acute tubular necrosis

Ans: C

142. A diabetic patient presents to you with a serum creatinine of 1.8 he tells you that he had normal RFTs about one month back, he had been taking pain killers for arthritis pain . which drug is responsible?
   a. Naproxen
   b. Tramadol
   c. Paracetamol

Ans: A

143. In tubule interstitial disease what is the positive finding?
   a. Hyperchloremic metabolic acidosis.
   b. Hypokalemia.
   c. Normal GFR
   d. Normal sized kidney.

Ans: A

144. 12-year history of diabetes now with right flank pain haematuria and derangement of RFTS
   a. Renal vein thrombosis
   b. Papillary necrosis
   c. Acute pyelonephritis

Ans: B

145. Which of the following drugs is a common cause of interstitial nephritis?
   a. Metformin
   b. Ranitidine
   c. Lithium
   d. Omeprazole
   e. Ondansetron

Ans: D

146. A patient was prescribed rifampicin developed oliguria with deranged RFT's, it is known to causes which disease?
   a. Glomerulonephritis
   b. Papillary necrosis
   c. Acute interstitial nephritis
   d. Acute tubular necrosis

Ans: C

147. Patient presented with fever and rash; history suggests that he had used antibiotics for sore throat. On investigation blood film shows eosinophilia, diagnosis?
   a. Interstitial nephritis
   b. Glomerulonephritis
   c. Nephrotic syndrome
   d. Papillary necrosis
   e. Acute tubular necrosis

Ans: A

148. Which one of the following is recognized as a cause of acute tubular necrosis?
   a. Penicillin's
   b. Cephalosporins
   c. Omeprazole
   d. Furosemide
   e. Amikacin

Ans: E

149. 145. Patient with fever' loin pain and haematuria' IVU shows papillary necrosis with renal scarring like cup n spill least likely characteristic of?
   a. Acute pyelonephritis
   b. analgesic use
   c. Syphilis
   d. Diabetes mellitus
   e. Sickle cell disease

Ans: C

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150. A scenario in which patient has following labs: Na+ 139, K+ 2.5 & BSR – normal
   a. Addison disease
   b. Conn's syndrome
   c. Renal tubular acidosis

Ans: C

151. 40-year-old male in ER with acidic PH with Na+ 145 and potassium 2.5. Diagnosis?
   a. Addison
   b. Renal tubular necrosis
   c. Diabetic ketoacidosis
   d. Lactic acidosis

Ans: B

152. A patient is suffering from renal tubular acidosis, his urine PH is 5.4. The patient urine cannot be made alkaline even by giving Bicarbonate. Which type of RTA it is?
   a. RTA type I
   b. RTA type II
   c. RTA type IV

Ans: B

153. A 20 years old male presents you with generalized weakness, pH=7.22, Na=130, K=3, Cl=100, HCO3=18, cause?
   a. Addison's disease
   b. Conns syndrome
   c. Vomiting
   d. RTA type 1

Ans: D

154. To differentiate between proximal and distal RTA, following labs should be done.
   a. Serum HCO3
   b. Serum lactate.
   c. Serum K+
   d. Serum H+

Ans: A

155. Which one of the following can be used to differentiate between type I and type IV RTA?
   a. Serum potassium
   b. Serum hydrogen ion
   c. Urine pH

Ans: C

156. How to differentiate type 4 renal tubular acidosis from type 2 RTA
   a. Serum Na+
   b. Serum H+
   c. Serum potassium

Ans: C

157. RTA I and RTA 4 are differentiated by?
   a. Na level
   b. Ca level
   c. K level

Ans: C

Nephrology

Radiant Notes

Renal Tubular Acidosis

❖ A disorder of the renal tubules that leads to **normal anion gap (hyperchloremic) metabolic acidosis**

	Distal renal tubular acidosis (type 1)	Proximal renal tubular acidosis (type 2)	Hyperkalemic renal tubular acidosis (type 4)
Defect	Defect in ability of α intercalated cells to secrete H+ → no new HCO3	Defect in PCT HCO3 reabsorption	↓aldosterone production→ Hyperkalemia →↓ NH3 synthesis in PCT →↓ NH4+ excretion
Urine pH	> 5.5	< 5.5.	< 5.5.
Serum K+	**Hypokalemia**	**Hypokalemia**	**Hyperkalemia**
Causes	Amphotericin-B toxicity Congenital anomalies(obstruction) of urinary tract Sjogrens	Fanconi syndrome Multiple myeloma carbonic anhydrase inhibitor	Diabetes, ACE inhibitors, ARBs, NSAIDs
Complications	Renal stones	Osteomalacia	Hyperkalemia

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158. RTA associated with Sjogren's?

a. RTA type I
b. RTA type II
c. RTA type IV

Ans: A

159. RTA associated with Wilson's Eye findings

a. RTA type I
b. RTA type II
c. RTA type IV

Ans: B

160. A 57-year-old man with 8-month history of low back ache has following investigations. Sodium 135, pH 7.3, HCO3 14, Ca 8.4, ALP 308, What type of tubular acidosis will you expect?

a. RTA type 1
b. RTA type 2
c. RTA type 4

Ans: B

161. 25-year-old male presents with generalized weakness. Na 140, k 2.5, HCO3 19. What is the diagnosis?

a. Conn's syndrome
b. Cushing syndrome
c. RTA 1
d. Chronic diarrhea

Ans: C

162. What is the cause of the following results? pH 7.32, Na 132, K 3.0, Cl 108, HCO3 18:

a. Alcoholism
b. Renal tubular acidosis type 1
c. Diabetes ketoacidosis
d. Diarrhea

Ans: B

163. Which one of the following Renal tubular acidosis is associated with Osteomalacia?

a. RTA type 1
b. RTA type 2
c. RTA type 4

Ans: B

164. A patient brought in ER with pain in lumbar region, his labs revealed HCO3 14, RBS normal, serum K+ decreased, ultrasound shows small renal calculi, diagnosis?

a. Diabetic ketoacidosis
b. Addison disease
c. Conn syndrome
d. RTA type 4
e. RTA type 1

Ans: E

165. A patient developed metabolic acidosis associated with hypokalemia and hypophosphatemia. he has been diagnosed as a case of multiple myeloma. Which type of renal tubular acidosis occurs?

a. Type 1
b. Type 2
c. Type 3
d. Type 4

Ans: B

166. Hyperchloremic metabolic acidosis is seen in

a. Uremia
b. Diabetic ketoacidosis
c. Lactic acidosis
d. Renal tubular acidosis

Ans: D

167. Patient presented with lethargy and weakness, his labs reveled HCO3 10 mEq/L, Na+ 140 mEq/L, k+ 2.5 mmol/L, cl 100, pH 7.32, urine pH 4.5, Glucose 90, possible diagnosis?

a. Urea cycle defect
b. Organic academia
c. RTA1
d. RTA 2
e. Meningitis

Ans: D

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168. The most common organism causing UTI is?

a. E. coli
b. Staphylococcus saprophyticus
c. Klebsiella
d. Pseudomonas

Ans: A

169. A middle-aged man with significant past history of DM and HTN has complain of fever, pain in right lumbar region for few days and hematuria with rigors and chills. the most appropriate diagnosis is?

a. Renal vein thrombosis
b. Acute pyelonephritis
c. Renal cell CA
d. Acute papillary necrosis

Ans: B

170. A 22 years old unmarried girl presented with recurrent UTI. urine C/S showed mixed growth. what should be done?

a. CT scan abdomen
b. MRI abdomen
c. USG abdomen and pelvis
d. Gynecological examination.

Ans: C

171. A young female of 23 years presented to you in OPD with recurrent UTI. what will be your best next investigation?

a. X ray KUB.
b. USG KUB
c. Urine C/S

Ans: C

172. Correct statement regarding UTI:

a. Nitrates are specific for infection
b. More common in males
c. Doxycycline is drug of choice in females
d. Bacteroides are most common organisms

Ans: C

173. A female of young age non-diabetic presented with urinary frequency and burning. Urinalysis shows WBC's, treatment?

a. Nitrofurantoin
b. Cefixime
c. Cotrimoxazole
d. Ciprofloxacin

Ans: A

174. A middle age male presented with backache and recurrent UTI. Investigation?

a. Urine dip stick
b. Urine C/S
c. Ultrasound KUB

Ans: B

175. Female patient presented with low Hb and acute ante- partum pyelonephritis, cause of anemia is?

a. Decreased EPO
b. Fe deficiency
c. Hemolysis by endotoxins
d. Increased RBC destruction by bacteria

Ans: C

176. A patient presented to you with a significant past history of recurrent UTI now she has developed chronic pyelonephritis. Reason?

a. Reflux nephropathy
b. Renal stones
c. Analgesic nephropathy
d. Idiopathic
e. Chronic GN

Ans: A

Nephrology

Radiant Notes

Urinary Tract Infection

- Definition
  - Inflammation of urinary bladder. usually defined as more than 105 organisms per milliliter of mid-urine sample
- Risk factors
  - Female gender (short urethra), sexual intercourse ("honeymoon cystitis"), indwelling catheter, diabetes mellitus, impaired bladder emptying
- Causes
  - E coli (most common).
  - Staphylococcus saprophyticus—seen in sexually active young women (E coli is still more common in this group).
  - Klebsiella.
  - Proteus mirabilis—urine has ammonia scent.
- Diagnosis:
  - Best initial test: urinalysis ---WBCs + Nitrites
  - Most accurate test: urine culture
- Treatment:
  - Lower UTI in non-pregnant women/adults: trimethoprim or nitrofurantoin for 3 days
  - Pregnant women with symptomatic bacteriuria: IV ceftriaxone followed by Ampicillin oral

Pyelonephritis

- Neutrophils infiltrate renal interstitium. Affects cortex with relative sparing of glomeruli/vessels.
- Clinical features:
  - Fever, flank pain, nausea/vomiting, rigors and chills.
- Causes includes
  - Ascending UTI (E. coli is most common)
- Treatment:
  - Antibiotics. Ceftriaxone 1st choice (Ref MTB page 122)
  - the BNF currently recommends a broad-spectrum cephalosporin or a quinolone for 10-14 days

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Nephrology

177. All are risk factor for stone formation except

a. Renal tubular acidosis
b. Cadmium.
c. Cystinosis
d. Hyperparathyroidism.

Ans: C (There is a difference between cystinuria and cystinosis—I am not sure about this is real IMM Question---this question was discussed in previous papers, same question present in MRCP Q-bank—anyhow I included it)

178. A patient with hematuria and flank pain radiating to groin, Diagnosis?

a. Urinary tract infection
b. Renal stones
c. Glomerulonephritis

Ans: **B**

179. Middle age male presented with hematuria and Flank pain which is colicky in nature. He was sent for investigations X-ray normal. ultrasound showed dilated pelvicalyceal system and multiple shadows, diagnosis?

a. Urate stones
b. Cysteine stone
c. Calcium stones

Ans: **A**

180. Stones on USG but not on X-ray:

a. Cysteine stones
b. Uric acid stones
c. Phosphate stone
d. Calcium stone

Ans: **B**

181. Hexagonal crystals in urine are a characteristic feature of a

a. Oxalosis
b. Cystinuria
c. Calcinosis
d. Magnesemia

Ans: **B**

182. A patient with primary oxaluria commonly present with

a. Nephrolithiasis
b. Cholelithiasis.
c. UTI

Ans: **A**

183. A patient suddenly develops colicky pain in his flank now presenting hematuria what is the cause?

a. Renal colic
b. Ca bladder
c. BPH

Ans: A

Radiant Notes

Kidney Stones

- Features → flank pain (which is colicky, radiating to groin), hematuria
- Complications → pyelonephritis, hydronephrosis

Calcium stones

- Most common (80%)
- Caused by:
  - Ethylene glycol (antifreeze) ingestion
  - Vitamin C abuse
  - Hypercalcemia.
- **Envelop shaped**
- Radiopaque
- Treatment:
  - Low-sodium diet, Thiazides, Citrate

Ammonium magnesium phosphate (Also known as struvite)

- 2nd common (15%) of stones.
- Caused by
  - Urease ⊕ bugs (e.g., **Proteus Staphylococcus saprophyticus, Klebsiella**).
- **Commonly form staghorn calculi**
- Coffin lid
- Radiopaque

Uric acid

- Caused by:
  - Strong association with Hyperuricemia (e.g., gout)
  - Often seen in leukemia.
- Rhomboid or rosettes
- **RadiolUcent**

Cystine

- Caused by
  - Cystine-reabsorbing PCT transporter loses function, causing cystinuria
- Hexagonal shape
- Faintly radiopaque

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184. What is the most accurate diagnostic test for nephrolithiasis?

a. CT scan.
b. X-ray.
c. Sonography.
d. Urinalysis.
e. Intravenous pyelogram.

Ans: **A**

---

185. A young house wife presents to you in OPD with lumbar pain and urinary complains. what is the best investigations?

a. Helical CT
b. Cystoscopy
c. Urine C/S
d. USG KUB

Ans: **A**

---

186. A woman with renal colic, on Ultrasound 1.8 cm stone with no obstruction, what is the most appropriate next step in the management of this patient?

a. Hydrate and observe
b. Nephrolithotomy
c. Lithotripsy

Ans: **C**

---

187. A middle-aged female presented in ER with severe ureteric pain. what will be your next step after pain management?

a. Cystoscopy
b. X-ray KUB
c. IVU
d. Spiral CT scan
e. USG KUB

Ans: D

---

188. Least chances of renal stones are associated with:

a. Hyperlipidaemia
b. Hyper PTH
c. Hyper vit-D
d. Infections
e. Hyperuricemia

Ans: **A**

---

189. Type of renal stones formed in Crohns disease?

a. Oxalate stones
b. Cholesterol stones
c. Uric acid stones
d. Xanthine stones

Ans: **A**

---

190. A female comes to you with complain of urinary incontinence just before she reaches washroom. What type of incontinence she has?

a. Urge incontinence
b. Stress incontinence
c. Overflow incontinence - BPH
d. Mixed incontinence – urge + stress

Ans: **A**

---

191. 26-year-old female presents with frequent urination, bed wetting, and urination when laughing. What is the cause?

a. Psychogenic
b. Stress incontinence
c. Urge incontinence
d. Diabetes insipid us

Ans: **B**

---

192. A female complains of frequency of micturition. she says she gets wet before reaching wash room. what is most likely cause?

a. Stress incontinence
b. Urge incontinence
c. UTI
d. PID

Ans: **B**

Radiant Notes

Urge incontinence (also called detrusor instability)

- Most common type in elderly and nursing-home patients
- This is characterized by a sudden urge to urinate (e.g., **patients are unable to make it to the bathroom**),
- Management→ bladder-training exercises, anticholinergic medications (oxybutynin)

Stress incontinence

- Occurs mostly in women (after multiple deliveries of children)
- Clinical features: **involuntary urine loss during cough, laugh, sneeze, exercise**
- Management→ Kegel exercises, surgical tightening

Overflow incontinence

- Common in diabetic patients and patients with neurologic disorders
- Causes: neurogenic bladder (diabetic patients, lower motor neuron lesions),
- Clinical features: **nocturnal wetting, frequent loss of small amount of urine**
- Management cholinergic agents (e.g., bethanechol) to increase bladder contractions; α-blockers (e.g., terazosin, doxazosin) to decrease sphincter resistance

Nephrology

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Nephrology

193. A patient ABG values of pH=7.66, HCO3 =34, PCO2 = 34, what is the explanation for his ABGs?
a. Respiratory alkalosis
b. Metabolic acidosis
c. Respiratory acidosis
d. Mixed respiratory + metabolic alkalosis

Ans: D

194. A patient comes to you in ill condition. His blood pH is 7.31 PCO2 is 44 mmHg & HCO3 is 17 mEq/L. What diagnosis you are thinking of this patient?
a. Metabolic alkalosis
b. Metabolic acidosis
c. Respiratory acidosis
d. Compensatory acidosis
e. Compensatory alkalosis

Ans: B

195. Ph=7.32, Pco2=50, HCO3=24, increased anion gap. Diagnosis
a. Respiratory acidosis
b. Respiratory alkalosis
c. Metabolic alkalosis
d. Metabolic acidosis

Ans: A

196. A patient chronic smoker and COPD presented with shortness of breath. ABG's were done which showed pH 7.05, pCO2 56, HCO3 18, SaO2 88, what is your diagnosis?
a. Respiratory alkalosis
b. Respiratory acidosis
c. Mixed Respiratory and metabolic acidosis
d. Partially compensated respiratory acidosis

Ans: C

197. A patient presented in ER with dyspnea, ABGs showed with low PH, low PCO2 and base excess in negative, diagnosis?
a. Mixed respiratory and metabolic acidosis
b. Metabolic acidosis Partly compensated
c. Metabolic acidosis Fully compensated

Ans: B

198. A patient with COPD exacerbation has the following AGBs: pH 7.1, Pco2=79 Po2=56 HCO3=36. Type of error:
a. Partially compensated respiratory acidosis
b. Compensated respiratory acidosis
c. Metabolic alkalosis
d. Uncompensated respiratory acidosis

Ans: A

Radiant Notes

Acidosis and Alkalosis

❖ Normal values

pH	7.35-7.45 (below 7.35 is acidic and above 7.45 is alkalosis)
CO_2	35-45 (less than 35 alkalosis, and above 45 acidosis)
HCO_3	22-26 (below 22 acidosis and above 26 alkalosis)

Analysis (5 steps)

❖ **Step-1**
- Is the pH normal?
- Look for pH value first and compare whether it is acidic or alkalotic

❖ **Step-2**
- Is the CO2 normal?
- Look for CO2 value first and compare whether it is acidic or alkalotic

❖ **Step-3**
- Is the HCO3 normal?
- Look for HCO3 value first and compare whether it is acidic or alkalotic

❖ **Step-4**
- Match the CO2 or the HCO3 with the pH?
- Look for the value which is making the pH acidic or basic
- suppose if pH is acidic and respiratory value is also acidic then the cause is respiratory acidosis and vice versa

❖ **Step-5**
- Does the CO2 or the HCO3 go the opposite direction of the pH?
- Next step looks for the value which goes in opposite direction, suppose if pH is acidic, CO2 is acidic, and you have made the diagnosis of respiratory acidosis. HC03 is basic, this means compensation has been done and diagnosis will be, respiratory acidosis with metabolic alkalosis.

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199. 50-year-old patient's ABGs show: Ph 7.12, PCO2 70, HCO3 55. What type of abnormality is there?
  a. Respiratory acidosis with partial metabolic compensation
  b. Metabolic alkalosis with respiratory compensation
  c. Uncompensated respiratory acidosis

Ans: A

200. Interpret this ABGs, the result of which are: pH 7.66, PCO2 32 mmHg, HCo3 34
  a. Respiratory alkalosis
  b. Mixed respiratory and metabolic alkalosis
  c. Respiratory alkalosis and metabolic acidosis
  d. Metabolic acidosis

Ans: B

201. A patient with DKA will have anion gap
  a. 10
  b. 12
  c. 15
  d. 20

Ans: D

202. High anion gap metabolic acidosis is seen in:
  a. DKA
  b. Diarrhea
  c. Acetazolamide

Ans: A

203. Which of the following causes a normal anion gap acidosis?
  a. Methanol poisoning
  b. Diarrhea.
  c. DKA
  d. Uremia.

Ans: B

204. Rapid vomiting causes
  a. Hypokalemic metabolic alkalosis
  b. Hypochloremic metabolic alkalosis

Ans: A

205. All of the following present with normal anion gap acidosis except:
  a. RTA type1
  b. RTA type 4
  c. Diabetic ketoacidosis
  d. Diarrhea

Ans: C

206. Metabolic alkalosis causes:
  a. Hypokalemia
  b. Hyperkalemia
  c. Hypomagnesemia

Ans: A

Radiant Notes

Metabolic Acidosis

- The Anion Gap is used for the evaluation of metabolic acidosis to determine the presence of unmeasured anions.
- The anion gap is the difference between primary measured **Cations** (Na+) and the primary measured **anions** (Chloride Cl- and bicarbonate HCO3-) in serum.
  - ✓ **Anion gap = $Na^+ - (Cl^- + HCO_3^-)$**

Metabolic acidosis--↑ Anion gap > 12 mEq/L
Mnemonic---MUDPILES:

- Methanol (formic acid)
- Uremia
- Diabetic ketoacidosis
- Propylene glycol
- Iron tablets or INH
- Lactic acidosis
- Ethylene glycol
- Salicylates (late)

Metabolic acidosis---Normal anion gap 8–12
Mnemonic--HARDASS:

- Hyperalimentation
- Addison disease
- Renal tubular acidosis
- Diarrhea
- Acetazolamide
- Spironolactone
- Saline infusion

Metabolic Alkalosis

- **Loop diuretics**
- Vomiting
- Antacid use
- Hyperaldosteronism

Respiratory Acidosis

- Airway obstruction
- Acute lung disease
- Chronic lung disease
- Opioids, sedatives
- Weakening of respiratory muscles

Respiratory Alkalosis

- Hysteria
- Hypoxemia (e.g., high altitude)
- Salicylates (early)
- Tumor
- Pulmonary embolism

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Nephrology

207. A young boy presents to you with hematuria. He tells you that hematuria is painless and occurs at the end of micturition complete urine examination show presence of oval shaped eggs. what is the diagnosis?

a. Leishmaniasis
b. Schistosomiasis
c. Ascariasis
d. Hookworm infection

Ans: B

208. A 60 years old male presents to you with frank hematuria. his BP is 180/110 pulse 60, afebrile. RR 16/ min. A mass was palpable in the lumbar region. Diagnosis?

a. Autosomal dominant Polycystic kidney disease
b. Autosomal recessive Polycystic kidney disease
c. Hypernephroma

Ans: C

209. An old man presented to you with painless hematuria for 2 months, he denies any history of trauma. USG abdomen was done which came to be normal, next investigation to do?

a. Cystoscopy
b. IVP
c. Urinalysis
d. Urine C/S

Ans: A

210. 30-year-old male patient presents with painless hematuria, urine examination shows eggs with spikes. What is the diagnosis?

a. Leishmaniasis
b. Giardiasis
c. Schistosomiasis
d. Tapeworm

Ans: C

211. 55-year-old man came with pain in right flank and hematuria, investigations revels normal BUN & creatinine, Ca++ 6mg/dL, Hb 18mg/dL. On examination there is mass in Right flank, Diagnosis?

a. Hepatocellular carcinoma
b. Renal cell carcinoma
c. Squamous cell carcinoma
d. Adenoma

Ans: A

212. Old lady with painless hematuria & history of weight loss, investigation?

a. IVP
b. Uretherocystoscopy
c. Urine R/E

Ans: B

Radiant Notes

Renal cell carcinoma

- Originate→PCT cells
- Incidence
  - Most common renal malignancy and most common in men 50–70 years
- Associated with
  - Gene deletion on chromosome 3 (RCC=3 letters= Chromosome 3)
- Presenting features
  - Flank pain, palpable mass, and hematuria, fever, Secondary polycythemia
  - Associated with paraneoplastic syndromes (e.g.: ectopic EPO, ACTH, PTHrP, renin).
- Invades
  - Renal vein (may develop varicocele if left sided) then IVC and spreads hematogenously
- Metastasizes to
  - Lung and bone.

Transitional Cell Carcinoma

- Most common tumor of urinary tract system
- Can occur in renal calyces, renal pelvis, ureters, and bladder.
- Can be suggested by **painless hematuria** (no casts).
- Associated with problems in your Pee SAC:
  - Phenacetin, Smoking, Aniline dyes, and Cyclophosphamide.

Squamous Cell Carcinoma of the Bladder

- Chronic irritation of urinary bladder →squamous metaplasia → dysplasia and squamous cell carcinoma.
- Risk factors
  - **Schistosoma haematobium**
  - ✓ (S for Squamous cell carcinoma= S for Schistosoma haematobium) infection,
  - ✓ smoking, chronic nephrolithiasis.
- Presents
  - **painless hematuria.**

TIP

- Cystoscopy is always the answer when
  - ✓ There is hematuria without infection or prior trauma
  - ✓ The renal ultrasound or CT does not show an etiology.
  - ✓ Bladder sonography shows a mass for possible biopsy.
  - ✓ Cystoscopy is the most accurate test of the bladder.

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213. A patient complains of passing blood at the end of micturition with no pain. what is your best investigation?

a. Urine C/S
b. IVP
c. Cystoscopy
d. USG KUB.

Ans: **C**

---

214. A female patient present with complains od repeated UTI now developed dysuria and increased frequency. Investigation of choice?

a. Cystoscopy
b. IVU
c. Ultrasound abdomen

Ans: **B** (to look for abnormality in the renal anatomy that is causing repeated attack of UTI)

---

215. Investigation of choice to diagnose reflux uropathy is?

a. CT pelvis
b. Abdominal scan and post void urine volume
c. Retro grade pyelography
d. I/V pyelourography
e. Micturating cystourethrography

Ans: **E**

---

216. Bad prognostic feature of HSP is:

a. Age
b. Renal involvement
c. Pattern of rash
d. Fever

Ans: **B**

---

217. In genitourinary TB, which of the following can be seen?

a. Hematuria
b. Sterile pyuria
c. Bladder stone
d. Prostatitis

Ans: **B**

---

218. 68-year-old male diabetic, hypertensive male patient comes in ER with urinary retention. He has h/o urinary problems and pain in both legs. Urine D/R show 5-6 red cells. His lab show normochromic anemia. your next investigation is

a. PSA
b. Ultrasound KUB and prostate
c. IVU
d. Cystoscopy

Ans: **B**

---

219. In IgA nephropathy, which of the following does not indicate an increased risk of renal failure?

a. Proteinuria
b. High BP
c. Reduced GFR
d. Macroscopic haematuria

Ans: **D**

---

220. A young girl having hypertension, abdominal pain with deranged RFTs, father n brother had same problem, you are suspecting ADPKD, how will you diagnose?

a. Ultrasound abdomen
b. CT scan
c. IVP
d. Angiography

Ans: **A**

---

221. A patient was started on cyclophosphamide, which one of the following is most likely side effect?

a. Hirsutism
b. Gingival hyperplasia
c. Weight gain
d. Hemorrhagic cystitis

Ans: **D**

---

222. A young boy had Motor cycle accident, now presenting with cola coloured urine. Diagnosis?

a. Rhabdomyolysis
b. ATN
c. AIN
d. G6PD

Ans: **A**

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Chapter: 6 Hematology & Oncology

1. In uremia, which type of anemia occurs?
a. Megaloblastic anemia
b. Hypochromic normocytic anemia
c. Hypochromic microcytic anemia
d. Normochromic microcytic anemia

Ans: **D** (Read the text on right side—it depends on stages in these options –option D is right—if u have to choose with all the possible options normochromic and normocytic is the most common)

2. Most common anemia of CRF/CKD is
a. Normocytic normochromic
b. Microcytic normochromic
c. Hypochromic normocytic anemia
d. Hypochromic microcytic anemia

Ans: **A**

3. Blood picture in Iron deficiency anemia
a. Microcytic hypochromic
b. Macrocytic hypochromic
c. Normocytic hypochromic
d. Microcytic hyperchromic

Ans: **A**

4. Anemia in Kawasaki disease is
a. Microcytic anemia
b. Macrocytic anemia
c. Normocytic anemia

Ans: **C**

5. Pure red cell aplasia Blood film picture shows?
a. Normocytic normochromic anemia
b. Hypochromic microcytic anemia
c. Hyperchromic microcytic anemia
d. Hypocellular bone marrow

Ans: **A**

6. Young Patient has dyspnea and anaemic symptoms. MCV 100, MCHC 30, Hb 9. What is the type of anemia?
a. Hypochromic normocytic anemia
b. Hypochromic microcytic anemia
c. Normochromic microcytic anemia
d. Normocytic Normochromic anemia

Ans: **D**

7. A patient with some disease. Her HB 8, MCV 86 and MCH low. What type of anemia does she have?
a. Normocytic hypochromic anemia
b. Normocytic Normochromic anemia
c. Microcytic hypochromic anemia
d. Macrocytic hypochromic anemia

Ans: **A**

Radiant Notes

Anemia

- Anemia is a ↓RBC mass:
  - In male: → Hct < 41% or Hb < 13.5 g/dL (men);
  - In females→ Hct < 36% or Hb < 12 g/dL (women)
- Classification:
- Microcytic (MCV <80 fL)
  - Iron deficiency anemia
  - Thalassemia
  - Anemia of chronic disease
  - Lead poisoning
  - Sideroblastic anemia
- Macrocytic (MCV >100 fL)
  - **Megaloblastic macrocytic anemia (Hypersegmented neutrophils)**
    - B12 deficiency anemia
    - Folic acid deficiency anemia
  - **Non-megaloblastic macrocytic anemia (NO hypersegmented neutrophils)**
    - Alcoholism
    - Liver disease
    - Hypothyroidism
- Normocytic (MCV 80-100 fL)
  - **Non- hemolytic anemia (reticulocyte count normal or ↓)**
    - Aplastic anemia
    - Anemia with chronic kidney disease
  - **Intrinsic Hemolytic anemia (anemia with intrinsic cause, RC ↑)**
    - Hereditary spherocytosis (membrane defect)
    - G6PD, pyruvate kinase (enzyme deficiency)
    - Sickle cell anemia
    - Paroxysmal nocturnal hemoglobinuria
  - **Extrinsic Hemolytic anemia (RC ↑)**
    - Autoimmune
    - Microangiopathic
    - Macroangiopathic
    - Infections

Target cell (mnemonic-HALIT) → HbC disease, Asplenia, Liver disease, Iron def. anemia Thalassemia

Anemic of chronic disease (Liver or kidney)
- Mild: usually normocytic and normochromic
- Moderate: may be microcytic and normochromic
- Severe: may be microcytic and hypochromic

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Hematology & Oncology

8. Acute intravascular hemolysis is diagnosed by?

a. Increased indirect bilirubin
b. Decreased haptoglobin
c. Reticulocytosis
d. Increased TIBC
e. Hemoglobinuria

Ans: B

9. If a patient has a history of fever, hemoglobinuria, raised LDH and reduced haptoglobin. What is the possible mechanism behind it?

a. Uremia
b. Glucose 6 phosphate Dehydrogenase deficiency
c. Extravascular hemolysis
d. Intravascular hemolysis

Ans: **D**

10. Lab investigations show: Hb 8.0, retic count 5%, haptoglobin undetectable. What is the Likely cause?

a. Gilbert syndrome
b. Aplastic anemia
c. Intravascular hemolysis
d. Extravascular hemolysis

Ans: **C**

11. Which of the following is a cause of extravascular hemolysis?

a. DIC
b. Mismatched blood transfusion
c. Hereditary spherocytosis
d. PNH

Ans: **C**

12. What is the characteristic feature of intravascular hemolysis?

a. Inc bilirubin
b. Inc retics
c. Inc LDH
d. Dec haptoglobin

Ans: **D**

13. A patient presented to you with dark colored urine. Peripheral blood fil shows HB =7 TLC=4, PLT 70000, Schistocytes while haptoglobins are not detected. Diagnosis?

a. Hemolytic anemia
b. Extravascular hemolysis
c. Intravascular hemolysis
d. Aplastic anemia

Ans: **C**

14. RBC taken from patient with renal failure, placed in refrigerator followed by checking biochemistry K+ is increased, vol normal, LDH is increased cause?

a. Intravascular hemolysis
b. Extravascular hemolysis
c. Hemolyzed sample

Ans: **C**

Radiant Notes

Intravascular hemolysis

❖ Characterized by breakdown of RBC'S in the circulation (within the blood vessel)

❖ Findings:
- ↓ **haptoglobin**
- ↑ LDH, schistocytes and ↑ reticulocytes on blood smear.
- Characteristic hemoglobinuria, hemosiderinuria, and urobilinogen in urine.
- **Schistocytes reflect an intravascular hemolysis**

❖ Examples
- Mismatched blood transfusion
- G6PD deficiency
- MAHA
- Red cell fragmentation: heart valves, TTP, DIC, HUS
- PNH
- Cold AIHA

Note: Haptoglobin (Hp) binds free Hb. In intravascular hemolysis free HB will be released into circulation, Haptoglobin binds to it (results in ↓) this complex is removed by reticuloendothelial system (mostly spleen)

Extravascular hemolysis

❖ Characterized by breakdown of RBC's in reticuloendothelial system i.e. macrophages in spleen, liver and bone marrow

❖ Findings
- Macrophages in spleen clear RBCs.
- ↑ LDH
- No hemoglobinuria/hemosiderinuria
- ↑ unconjugated bilirubin, which can cause jaundice
- **Spherocytes usually reflect an extravascular hemolysis**

❖ Examples
- Haemoglobinopathies: sickle cell, thalassemia
- Hereditary spherocytosis
- Hemolytic disease of newborn
- Warm AIHA

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15. A patient has Hemoglobin 6.0. Blood picture shows target cells and microcytic hypo chromic anemia. Patient has fever and dysphagia, Diagnosis?

a. Iron deficiency anemia
b. Thalassemia intermediate
c. Anemia of chronic disease
d. Sideroblastic anemia

Ans: **A**

16. Which of the following is specific in Iron Deficiency Anemia?

a. Inc TIBC
b. Dec Ferritin
c. Low MCV
d. Increased MCV
e. Normal ferritin level

Ans: B

17. A 13-year-old female presented to you with fatigue & SOB on exertion. She has regular menstrual cycles but uses more that 5-4 pads per day. On examination there was conjunctival pallor with a negative digital rectal examination for blood. CBC shows Hb=7, MCV =67, RDW =15% which test will confirm that this is a case of iron deficiency anemia

a. Serum iron
b. TIBC
c. Ferritin
d. BM aspiration with biopsy

Ans: **C**

18. Best diagnostic test for Iron deficiency anemia?

a. Serum iron
b. Serum ferritin
c. Serum transferrin
d. TIBC

Ans: **B**

19. Patient with IDA was given iron supplements to monitor the response

a. TIBC
b. Serum Iron
c. Serum ferritin

Ans: **C**

20. A patient having Hb 6g/dL with worm infestation Ancylostoma duodenale presented came with complains of pallor. Diagnosis?

a. Vitamin b12 deficiency anemia
b. Acute Blood loss
c. Iron Deficiency anemia

Ans: **C**

21. 5 years old boy with presented with pallor on investigation low Hb (5gm/dl) and high TIBC, Diagnosis?

a. Lead poisoning
b. Thalassemia
c. Parasite infestation
d. Anemia of chronic disease

Ans: **C**

Radiant Notes

Iron Deficiency Anemia

- Most common anemia worldwide
- Dietary iron is absorbed in duodenum. Iron must be reduced i.e. Fe^{+2}
- Ascorbic acid reduces oxidized iron (Fe^{+3}) and is therefore important in iron reabsorption.
- Causes:
  - Dietary lack → children and elderly
  - Increased utilization → pregnancy, lactation and children
  - Impaired absorption → celiac disease, gastrectomy (gastric acid helps in iron reabsorption)
  - Blood loss → gastrointestinal blood loss (hook worm, PUD), menorrhagia (most common in women)
  - Ancylostoma duodenale
- Clinical features:
  - Koilonychias (spoon shaped nails)
  - Angular cheilosis (red, swollen patches in the corners of your mouth).
  - Pica (consumption of non-nutritive substances such as ice, clay).
  - Atrophic glossitis (bald tongue, smooth tongue).
  - **'Pencil' poikilocytes**
  - Plummer-Vinson syndrome:
    - Triad of ("Plumbers" DIE).
      - ✓ Dysphagia (Dysphagia for solids only)
      - ✓ Iron deficiency anemia, and
      - ✓ Esophageal webs.
      - ✓ Increased risk of esophageal squamous cell carcinoma
- Lab findings:
  - Microcytic anemia (MCV < 80 fL)
  - ↓ Serum iron, ↑ **TIBC (↑ only in this anemia),**
  - **↓ ferritin (best test),**
  - ↓ transferrin saturation

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22. Maximum Reticulocytosis after iron replacement in IDA is seen in time

a. 3 days
b. 1 week
c. 3 weeks
d. 4 months

Ans: **B** (Remember in some papers only 14th day was the right & closest option—so choose that if no other option available of 7-10 days)

✓ For IDA--- Increased reticulocyte count within 7-10 days

✓ For Vit B12 def anemia - The reticulocyte count will peak by the 5th–10th day after therapy and may be as high as 50%.

23. A 16-year-old guy is recently diagnosed as having beta thalassemia minor. his Hb 10.5g/dL mild microcytic anemia and he feel well. which of the following finding is characteristics in such case?

a. Increase osmotic fragility
b. Increase amount of HBA2
c. Small amount of HBs
d. Absent iron in bone marrow

Ans: **B**

24. A 16 years old girl who was investigated for microcytic anemia, now has been diagnosed as a case of thalassemia. formation of which of the following Hb is increased in alpha thalassemia?

a. H
b. A
c. F
d. F2

Ans: **A**

25. A young boy presents to you in OPD with history of multiple blood transfusions since birth. on examination you noticed hepatosplenomegaly. best test to reach the diagnosis?

a. Transferrin saturation
b. Ferritin levels
c. TIBC
d. Hb electrophoresis
e. Liver biopsy for iron load

Ans: **D**

Radiant Notes

α-Thalassemia

- Autosomal recessive disorder
- Characterized by ↓ synthesis of α-globin chains with relative excess of β-chains.
- α-thalassemia is due to gene deletions
- **Types:**
  - Silent carrier → (-/α α/α), deletion of one α-chain, asymptomatic.
  - Alpha thalassemia trait → (-/- α/α), deletion of 2 α chain, like β-thalassemia minor, mid anemia
  - HbH disease → (-/- -/α), characterized by precipitation of β-chain tetramers, severe anemia
  - Hydrops fetalis: (-/- -/-), deletion of all 4 chains, most severe of all, incompatible with life, characterized by precipitation of <u>γ-chains tetramers (Hb barts)</u>

β-thalassemia

- Autosomal recessive disorder
- Characterized by ↓ synthesis of β-globin chains with relative excess of α-chains.
- β-chains four in number and expressed post-natally only, therefore anemia manifests 6-9 months after birth.
- β-thalassemia is due to **point mutations** (most commonly splicing mutations)

- **<u>β-thalassemia minor</u>**: (heterozygote, β^0/β or β^+/β—one mutated and one normal)
  - Mild anemia
  - Protective against falciparum malaria
  - **Diagnosis confirmed by ↑HbA_2 (>3.5%) on electrophoresis**

- **<u>β-thalassemia major</u>**: (Cooley's anemia, homozygous β^0/β^0 or β^+/β^+)
  - Severe microcytic anemia requiring blood transfusion (2° hemochromatosis).
  - <u>Extra-medullary haematopoiesis:</u>
    - **Marrow expansion ("crew cut" on skull x-ray)**
    - Skeletal deformities. "Chipmunk" facies
    - Leads to hepatosplenomegaly
    - ↑ *Risk of parvovirus B19–induced aplastic crisis.*
  - **Diagnosis: ↑HbF ($\alpha 2\gamma 2$) -- 90-96%**

<u>Treatment</u>

- Folic acid and Blood transfusion
- Allogeneic stem cell transplantation is the treatment of choice for beta-thalassemia major with HLA-matched siblings and the only available cure.
- Iron-chelators to prevent iron overload (Deferoxamine, Deferiprone)

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26. Patient presented with anemia, failure to thrive, pallor, weakness and gives Hx of many transfusions to older brother. Labs showed Hb: 6, MCV 55, microcytic hypochromic anemia. Investigation of choice in this case is

a. Hb electrophoresis
b. Liver biopsy for iron load
c. Transferrin saturation
d. Ferritin levels
e. TIBC

Ans: A

---

27. 29 years old woman lethargic, investigations revealed Hb=9.6g/dl, While WBC and Platelet values were normal. Patient was advised Iron therapy previously and after two months Hb=10.6g/dl. Which investigation will you perform to know the cause of persistent anemia?

a. Transferrin saturation
b. Ferritin levels
c. TIBC
d. HB electrophoresis
e. Bone marrow biopsy

Ans: D

---

28. Pregnant lady of 6 months presented with generalized weakness and lethargy. Labs showed Hb 9.8g/dL, MCV 58, MCH 15 and serum ferritin 150 mcg/L. What is the most likely cause of anemia?

a. Iron deficiency anemia
b. Megaloblastic anemia
c. Sideroblastic anemia
d. Thalassemia minor

Ans: D

---

29. 22-year-old female presented with mild jaundice, lethargy and fatigue. On examination there is enlarged spleen. Labs showed Hb: 9 with microcytic hypochromic anemia and a ferritin 2000. Next best treatment option is?

a. Iron supplements
b. Deferoxamine
c. Ca oxalate
d. Blood transfusion

Ans: B

---

30. A thalassemia patient underwent bone marrow transplant. 28 days post bone marrow transplant he developed rash, TLC decreased & neutrophil count is 0.8, diagnosis?

a. Leukemia
b. Lymphoproliferative disorder
c. Graft versus host disease
d. Graft failure

Ans: C

---

31. At counselling the thalassemia minor mother who has a thalassemia major baby. She should be told that the chances of babies being affected with each pregnancy is?

a. 25% major, 50% minor, 25% normal
b. 25% major, 25% minor, 25% normal
c. 50% major, 25% minor, 25% normal
d. 50% major, 50% minor, no normal
e. 25% major, 25% minor, 50% normal

Ans: A

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32. Which of the following is a feature of anemia of chronic disease?

a. Raised iron
b. Decreased ferritin
c. Decreased TIBC
d. Raised haptoglobin

Ans: **C**

33. In anemia of chronic disease:

a. Decrease EPO causes decreased red cell maturation.
b. Decrease release of iron from macrophages

Ans: **B**

34. What is the antidote of lead poisoning?

a. Penicillamine
b. Methylene blue
c. EDTA
d. Activated charcoal

Ans: **C**

35. A patient presents with central abdominal pain and vomiting. On examination, abdomen is tender and bowel sounds were audible. Power is reduced in limbs and ankle and knee reflexes are absent. His sister has same problem. His Hb=9g/dl, MCV 67. What will be your diagnosis?

a. Lead Poisoning
b. Arsenic poisoning
c. Iron deficiency anemia

Ans: **A**

36. A patient with CRF having anemia. the treatment of anemia in CRF is?

a. Methotrexate
b. Dialysis
c. EPO injection
d. Blood transfusion

Ans: **C**

37. A patient previously normotensive after one week of Hemodialysis doesn't have control on BP but he is compliant in medicine like ferrous sulphate, erythropoietin, etc, his BP is 180/110 which of the following is responsible for worsening BP?

a. Vit D analogs
b. Erythropoietin
c. Alpha-calcidiol
d. Furosemide

Ans: **B**

38. All are side effects of erythropoietin except?

a. Bone aches
b. Hypertension
c. Pure red call aplasia
d. Long bone fractures

Ans: **D**

Radiant Notes

Anemia of Chronic Disease

- Etiology
  - infection, malignancy, inflammatory and rheumatologic disease, chronic renal and liver disease,
- Pathophysiology
  - An anemia of underproduction due to impaired iron utilization (hepcidin is a key regulatory peptide)
  - Hepatic hepcidin production is increased in inflammatory processes, trapping iron in enterocytes and macrophages (via ferroportin inhibition)
- Investigations
  - Diagnosis of exclusion
  - Peripheral blood
    - Mild: usually normocytic and normochromic
    - Moderate: may be microcytic and normochromic
    - Severe: may be microcytic and hypochromic
  - "Classic" serum iron indices
    - The serum iron is low (as in iron deficiency), but the TIBC is also low
    - Serum ferritin is normal or increased
- Treatment
  - Treat underlying disease
  - Erythropoietin

Lead Poisoning

- ↓ Heme synthesis and ↑RBC protoporphyrin.
- High risk in old houses with chipped paint.
- Symptoms of LEAD poisoning:
  - Lead Lines on gingivae (Burton lines) and on metaphyses of long bones on x-ray.
  - Encephalopathy and Erythrocyte basophilic stippling.
  - Abdominal colic and Sideroblastic Anemia.
  - Drops—wrist and foot drop. Dimercaprol and EDTA are 1st line of treatment.

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39. A patient presented with complain of weakness and lethargy, Peripheral smear shows anemia and hypersegmented neutrophils on, likely cause is
    a. Atrophic gastritis.
    b. Alcohol
    c. Iron deficiency anemia
    d. Thalassemia

Ans: A

40. Male patient with jaundice and Spleenomegaly, his labs showed MCV 110, Reticulocyte count 1.5 and hypersegmented neutrophils, what is your likely diagnosis?
    a. Aplastic anemia
    b. Folate deficiency anemia
    c. Hemolytic anemia
    d. Folate and B12 deficiency anemia

Ans: D

41. Most likely cause of pernicious anemia is?
    a. Iron deficiency
    b. Peptic ulcer
    c. Autoimmune atrophic gastritis
    d. Gastrectomy
    e. Alcohol

Ans: C

42. Pernicious anemia is not associated with:
    a. Hypothyroidism
    b. Addison's disease
    c. Cushing syndrome

Ans: C

43. All of the following are cause of megaloblastic anemia EXCEPT:
    a. Methotrexate
    b. Chloroquine
    c. Phenytoin
    d. Sulfamethoxazole

Ans: B

44. Macrocytosis is seen in all except:
    a. Alcoholism
    b. Pregnancy
    c. Hypothyroidism
    d. Chronic infections

Ans: D

45. Which of the following typically presents with macrocytic anemia?
    a. Lead poisoning
    b. Thalassemia
    c. Blind loop syndrome
    d. Blood loss through feces

Ans: C

Radiant Notes

Megaloblastic macrocytic anemia	Non-megaloblastic macrocytic anemia
❖ Due to impaired DNA synthesis ❖ **Hypersegmented neutrophils.** (> 5 lobes) ❖ Causes: B12 deficiency and folic acid deficiency anemia	❖ DNA synthesis is unimpaired ❖ Not associated with hypersegmented neutrophils. ❖ Causes: alcoholism, liver disease, hypothyroidism.

B12 (Cobalamin) Deficiency

- Vitamin B-12 binds with intrinsic factor (produced by parietal cells), then absorbed in terminal ileum.
- **Pernicious anemia (Autoimmune atrophic gastritis)**
    - Type 2 hypersensitivity reaction, autoimmune disease
    - Damage parietal cells→ ↓HCl, ↓intrinsic factor, association with other autoimmune diseases
- Clinical features:
    - Pallor, angular stomatitis, **Dementia, psychiatric problems, optic atrophy**
    - Peripheral neuropathy → Paresthesia
    - Subacute combined degeneration of spinal cord characterized by combination of **symmetrical posterior column loss** (loss of vibration and proprioception), and **symmetrical corticospinal tract loss** (upper motor neuron signs),
- Lab findings:
    - **↓ Serum B12, ↑ homocysteine, ↑methylmalonic acid, anti-intrinsic factor ab.** Pancytopenia's (in some cases)

Folate Deficiency Anemia

- Causes
    - Malnutrition (e.g., alcoholics)
    - Malabsorption, drugs (e.g., methotrexate, trimethoprim, phenytoin)
    - ↑requirement (e.g., hemolytic anemia, pregnancy).
- Lab findings:
    - ↑ Homocysteine, **normal methylmalonic acid. No neurologic symptoms**

Note (Clinical pearls)

- Folate stores are depleted in 3-6 months, Vit B12 sufficient for more than 3 years
- **Folate commonly found in green, leafy vegetables, while vitamin B12 is found only in foods of animal origin**
- **If someone is deficient in vitamin B12 and folic acid, the vitamin B12 deficiency must be treated first.** Folate and can lead to "steal" of B12 stores causing worsening of neuro complications (SACD)

Hematology & Oncology

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46. An old aged patient presented with complains of generalized weakness and exertional dyspnea. His CBC shows Hb=6.7. TLC=3.5. PLT=70000, MCV =125. the most appropriate diagnosis?

a. Aplastic anemia
b. Acute leukemia
c. Megaloblastic anemia
d. Iron deficiency anemia

Ans: C

47. If a patient develops Vit, B12 deficiency, which site of spinal cord will be affected?

a. Complete spinal cord
b. Cauda equine
c. Grey matter
d. White matter.

Ans: D

48. Which of the following peripheral neuropathies is associated with demyelination?

a. Alcohol
b. Vasculitis
c. DM
d. Vitamin B12 deficiency

Ans: D

49. A 27-year-old female presents with anemia and paresthesia's. She was treated with folic acid and her anemia improved but paresthesia's remained unaffected. What is the cause?

a. Vit B12 deficiency
b. Lead poisoning
c. Vit D deficiency
d. Concomitant diabetes mellitus

Ans: A

50. Patient presented with pallor and numbness in extremities. On examination mild unconjugated hyperbilirubinemia was present. Labs showed Hb=7.5, MCV high, platelets normal. Diagnosis

a. Folic acid deficiency
b. Vit B12 deficiency
c. Iron deficiency anemia

Ans: B

51. Patient with pancytopenia and tingling sensation in feet, diagnosis

a. Aplastic anemia
b. Vitamin B12 deficiency
c. Folic acid deficiency anemia
d. Anemia of chronic disease

Ans: B

52. A patient presents with a nine months Hx of tingling and weakness in her legs. There is also loss of joint position sense and vibration. CBC shows MCV 118, what is the likely diagnosis?

a. Vitamin B12 deficiency
b. Spinal tumor
c. Lumbar disc prolapsed
d. Lead poisoning

Ans: A

53. Regarding neuropathy due to vit B12 deficiency:

a. Folic acid can be used in treatment
b. Neurological findings can precede hematological findings
c. Most common cause is pernicious anemia
d. In 90% neuropathy is irreversible

Ans: B

54. A 50-year-old strict vegetarian presents with megaloblastic anemia. What is the cause?

a. Folate deficiency
b. Vit B12 deficiency
c. Iron deficiency
d. Methotrexate toxicity

Ans: B

55. A middle-aged woman presents to you in OPD with 1 months of abnormal sensations in her hands. general physical examination shows smooth but slightly enlarge tongue. systemic examination reveals decreased position and vibratory sensation in her extremities. CBs shows HB=9, MCV = 110 hypersegmented cells. What is your diagnosis?

a. Vit. B12 deficiency anemia
b. Iron deficiency anemia
c. Anemia of chronic disease

Ans: A

56. A patient presented vit b12 deficiency anemia with developed neurological signs, vit b12 is given to such patients for how long?

a. Life long
b. 24 months
c. 12 months
d. 3 months

Ans: A

57. Vitamin B12 absorption occurs:

a. Stomach
b. duodenum
c. Jejunum
d. Ileum
e. Colon

Ans: D

58. A patient presented with pallor and mild jaundice, on investigation Hb 4.7g/dL, TLC 2900, Platelets 15000. MCV 112fL. reticulocyte count is 2, What is your diagnosis?

a. Aplastic anemia
b. Iron deficiency anemia
c. Sideroblastic anemia
d. Vit B12 deficiency

Ans: D

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59. A patient with symmetric glove and stocking neuropathy with mcv of 112 fL, Diagnosis?

a. Folic acid deficiency anemia
b. Vitamin b12 deficiency anemia
c. Iron deficiency anemia
d. Lead poisoning

Ans: **B**

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60. A patient presented with anemia, he can't differentiate between pen and lighter. There is lack of two-point discrimination with value >11mm, but normal on finger pulp <8mm, Diagnosis?

a. Vitamin B9 deficiency
b. Vit b12 deficiency
c. Polymyositis

Ans: **B**

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61. 55 years old male after upper GI endoscopy report mentioned thickened Gastric rugae folds, most likely he will suffer from?

a. Iron deficiency anemia
b. Folic acid deficiency anemia
c. Vitamin B12 deficiency anemia

Ans: **C**

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62. A patient has tingling sensations n his peripheral body and lab investigation reveal raised MCV what is the most probable pathology

a. Sideroblastic anemia
b. Anemic of chronic disease
c. Pernicious anemia

Ans: **C**

---

63. A patient presented with macrocytic anemia, sore tongue & ataxia, pernicious anemia is suspected, what would you do to confirm the diagnosis?

a. Folate
b. CBC with mean corpuscular volume
c. Intrinsic factor Ab
d. Methylmalonic acid

Ans: **C**

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64. A patient with fatigue for 2 months and pins and needle sensation, test results Hb = 9.2, Hct = 27.6, MCV = 117, possible reason?

a. Intrinsic factor antibodies
b. Decreased ferritin levels
c. Increased TIBC
d. Decreased Folate levels

Ans: **A**

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65. Which of the following is the most appropriate investigation for pernicious anemia?

a. Antral biopsy
b. Bone marrow biopsy
c. Intrinsic factor antibodies
d. Barium enema

Ans: **C**

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66. A patient with bilateral lower limb neuropathy, exaggerated knee reflex and absent ankle reflex, Diagnosis?

a. Peripheral neuropathy from diabetes mellitus
b. Subacute combined degeneration of spinal cord due to Vitamin B12 deficiency
c. Subacute degeneration of spinal cord due to folate deficiency

Ans: **B**

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67. Rheumatoid arthritis patient taking methotrexate developed macrocytic anemia cause?

a. Folate Deficiency
b. B12 Deficiency
c. Pernicious Anemia
d. Iron Deficiency
e. Anemia of Chronic Disease

Ans: **A**

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68. A person presented with fatigue, labs revealed HB 8gm/dL, MCV 120, PLT and WBC normal, he is fond of taking frequent sushi fish, causative agent?

a. Ancylostoma duodenale
b. Ascaris
c. Diphyllobothrium

Ans: **C**

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69. A 37-year-old female presents to you in OPD with complains of weakness, lethargy and fever. his CBC shows Hb=8, TLC =2900, PLT 45000. His reticulocyte count was also decreased. you will order which diagnostic test now?

a. Bone marrow biopsy
b. Serum ferritin
c. Repeat CBC
d. Vitamin B12 levels

Ans: **A**

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70. Poor prognosis in aplastic

a. Severe Neutropenia
b. Thrombocytopenia
c. Poor response to steroids

Ans: **A**

---

71. An 18 years old patient present with fever. Labs showed low Hb, Low TLC and Low platelets. On examination spleen was not palpable, Diagnosis?

a. ALL
b. AML
c. CLL
d. CML
e. Aplastic anemia

Ans: **E**

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72. Which of the following is both the standard treatment and also a potential cure for aplastic anemia?

a. Antithymocyte globulin
b. Cyclosporine
c. Stem cell transplantation
d. Transfusions

Ans: **C**

---

73. A 65-year lady treated for arthritis now presented with weakness and bruise. Examination reveal pancytopenia, 0.1% Retic count and hypocellular bone marrow with normal cell morphology. Diagnosis is

a. Myelodysplastic syndrome
b. Aplastic anemia
c. Myeloproliferative disorder
d. Lymphoproliferative disorder

Ans: **B**

---

74. Scenario of aplastic anemia, which of the following is consistent with this diagnosis?

a. Hb less than 10gm/dl
b. Retic count greater than 2%,
c. Bone marrow cellularity greater than 30%.
d. Neutrophil > 1.5

Ans: **A**

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75. A patient presented with fever, he was given an antibiotic, later he presented with aplastic anemia, drug responsible is?

a. Macrolides
b. Doxycycline
c. Chloramphenicol
d. Penicillin

Ans: **C**

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76. Aplastic anemia caused by

a. PTU
b. Propranolol
c. Alcohol

Ans: **A**

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77. A scenario of severe aplastic anemia previously treated with ATG & cyclophosphamide, now patient is off medication for 4 years with all normal cell lines, came for follow up & has pancytopenia again. What to do?

a. Bone Marrow transplant
b. Bone Marrow Biopsy with cytogenetic studies

Ans: **B**

Radiant Notes

Aplastic anemia

- Caused by failure or destruction of myeloid stem cells due to:
  - Radiation and drugs (benzene, chloramphenicol, PTU, Methimazole alkylating agents, antimetabolites)
  - Viral agents (parvovirus B19, EBV, HIV, HCV)
  - Fanconi anemia (DNA repair defect)
  - Idiopathic (immune mediated, 1° stem cell defect); may follow acute hepatitis
- <u>Clinical Features</u>
  - Pancytopenia
  - Other abnormalities such as hepatosplenomegaly, lymphadenopathy, or bone tenderness should not be present, and their presence should lead to questioning the diagnosis.
- <u>Lab Findings</u>
  - Bone marrow biopsy = most accurate test showing **aplasia or hypoplasia** of marrow cells with fat replacement and decreased cellularity
- <u>Treatment:</u>
  - Withdrawal of offending agent
  - **Immunosuppressive regimens (e.g., antithymocyte globulin plus cyclosporin)**
  - Bone marrow allograft
  - RBC/platelet transfusion
  - Bone marrow stimulation (e.g., GM-CSF)

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78. Patient with features of pancytopenia, high MCV, Blast cells and hepatosplenomegaly likely diagnosis?

a. Vit B12 deficiency anemia
b. Hypothyroidism
c. Liver disease
d. Myelodysplastic syndrome

Ans: D

79. A 67-year-old man is diagnosed with myelofibrosis. What is the most common presenting symptom of myelofibrosis?

a. Lethargy
b. Anorexia and weigh loss
c. Night sweats
d. Splenomegaly

Ans: A

80. 80-year-old female with HB 9mg/dl. Platelets 70000, WBC 2500, bone marrow aspirate shows dry tap. What is the diagnosis?

a. ALL
b. CML
c. AML
d. Myelofibrosis

Ans: D

81. An elderly patient presents to you in OPD. her labs show Hb=9, PLT =89, Her physical examination reveals massive splenomegaly. bone marrow biopsy was done showing dry aspirate your diagnosis?

a. ALL
b. CLL
c. AML
d. Myelofibrosis

Ans: C

82. Patient presents with abdominal distension and lethargy. There is massive Spleenomegaly. On imaging spleen is 3000 mg. what is the cause

a. Infectious mononucleosis
b. Malaria
c. Myelofibrosis
d. Myelodysplastic syndrome

Ans: C

83. Elderly patient with fatigue and tear drop cells on peripheral smear, Bone marrow biopsy show severe fibrosis with reduced cell lines. most probable diagnosis?

a. Myelofibrosis
b. Hypersplenism
c. Hereditary spherocytosis
d. Sickle cell anemia

Ans: A

84. In which one of the following condition trephine Biopsy is done?

a. Visceral leishmaniasis
b. Myelodysplasia
c. Leucoerythroblastic disorder

Ans: C

85. A patient presented with anemia and there is leukoerythroblastosis, what investigation should be done to reveal Diagnosis?

a. Bone marrow biopsy
b. Iron level
c. B12, folate level
d. Blood indices

Ans: A

Hematology & Oncology

Radiant Notes

Primary Myelofibrosis (Type of Myeloproliferative disorder)

- Excessive bone marrow fibrosis leading to marrow failure
- **Characterized by**
- Hypermetabolic symptoms: night sweats, fever, weight loss
- **Fatigue (the most common presenting symptom)**—Ref MRCP notes page 608
- Anemia, variable WBC's and PLT
- Peripheral smear: **Leukoerythroblastosis** (**tear drop cells**, nucleated RBCs, immature WBCs); large abnormal platelets
- **Massive Spleenomegaly**
- BM aspirate → **"dry" tap**;
- BM trephine biopsy→ severe fibrosis,
- **Treatment:**
- Allogeneic stem cell transplant is potentially curative
- JAK2 inhibitors (Ruxolitinib)
- Symptomatic treatment

Myelodysplastic Syndromes

- Heterogeneous group of malignant stem cell disorders characterized by dysplastic and ineffective blood cell production resulting in peripheral cytopenias, and a variable risk of transformation to acute Leukemias
- **Diagnosed by**
  - Pancytopenia with abnormal shapes of RBC's (High MCV, sideroblasts), WBC's (bi-lobed or unsegmented nuclei), PLT (giant hypogranular platelets)
  - Bone marrow (definitive diagnosis) → **dysplastic** and often **normocellular/hypercellular** + Blast cells

MDS Vs. Aplastic Anemia

- Both causes pancytopenia
- **Aplastic anemia shows Hypocellular bone marrow while MDS shows normocellular or hypercellular**

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Hematology & Oncology

86. A 22-year-old man with sickle cell anemia presents with pallor. Lethargy and a headache, blood results are as follows: Hb 4.8 g/dL reticulocytes 3% infection with a parvovirus is suspected. What is the likely diagnosis?

a. Sequestration crises
b. Aplastic crises
c. Transformation to myelodysplasia
d. Hemolytic crises

Ans: B

87. A young rickshaw driver who is a diagnosed case of sickle cell anemia presents to you in hematology clinic with pallor headache and lethargy. CBC shows Hb 4g/dL, Retic count 0.5%, infection with a parvovirus is suspected. what is your diagnosis?

a. Sequestration crises
b. Vaso-occlusive crises
c. Hemolytic crises
d. Aplastic crises

Ans: D

88. A 4-year-old girl patient of sickle cell anemia was brought in Emergency with abdominal pain. On examination pulse was feeble and blood pressure low, clinically anemic and palpable spleen on examination. what is the most likely diagnosis?

a. Liver disease
b. Parvovirus infection
c. Thrombotic crises
d. Sequestration crises
e. Salmonella infection

Ans: C

89. In a patient of sickle cell disease osteomyelitis is caused by

a. H. Influenza
b. Salmonella
c. Clostridium
d. Staph aureus

Ans: B

90. The most common crisis in Sickle cell anemia.

a. Sickle chest syndrome
b. Vaso-occlusive crises
c. Sequestration crises
d. Aplastic crisis

Ans: B

91. Aplastic crises in sickle cell anaemia is due to infection due to:

a. Salmonella Typhi
b. Pneumococci
c. Herpes virus
d. Parvovirus B19

Ans: D

Radiant Notes

Sickle Cell Disease

- Caused by point mutation at position 6 of β-globin chain resulting in substitution of valine for glutamic acid
- **Heterozygous condition** (sickle cell trait)
  - HbAS (60% normal Hb, 40% HbS-sickle Hb)
- **Homozygous condition:**
  - Also called sickle cell anemia i.e. HbSS (100% HbS, no normal Hb)
- Newborns are initially asymptomatic because of ↑ **HbF** and ↓ **HbS**.
- Pain is typically in the long bones, back, chest, and abdomen.
- "Crew cut" on skull x-ray due to marrow expansion from ↑erythropoiesis (also seen in thalassemia's).
- Complications
  - Susceptibility to infections
    - ✓ The most common infectious organisms include Streptococcus pneumonia, Staphylococcus aureus, Salmonella spp or H. influenza.
    - ✓ Vaccinations are a key mechanism in prevention.
    - ✓ **Septicemia and meningitis→ strept pneumoniae**
    - ✓ **Osteomyelitis → salmonella**
  - Aplastic crises
    - ✓ Toxins and infections (especially parvovirus B19) transiently suppress bone marrow
  - Splenic sequestration crises
    - ✓ Usually in children; significant pooling of blood in spleen resulting in acute Hb drop and shock uncommon in adults due to asplenia from repeated infarction
  - Vaso-occlusive crises: (inactivates NO) -- Results from microvascular occlusion and causes—**also known as painful crisis or thrombotic crisis3-----Precipitated by infection, dehydration and deoxygenation**
    - ✓ Stroke, Mesenteric ischemia, Priapism – painful prolonged erection
    - ✓ Hand-foot syndrome
    - ✓ Acute-chest syndrome→ most common cause of death in adults. vaso-occlusion of pulmonary capillaries
  - Hemolytic crises:
    - ✓ Rare
    - ✓ Fall in hemoglobin due an increased rate of hemolysis
  - **Auto splenectomy→ Howell-Jolly bodies**

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92. A boy presented in ER with yellow colour skin and deeply jaundice, hypersplenism, labs showed Hb 5.6 g/dL, PLT normal and TLC 10,000, Retic count 10%, conjugated bilirubin 0.9, Diagnosis

a. Aplastic crisis
b. Hemolytic crisis
c. Vaso-occlusive crisis

Ans: **B**

93. A patient presented with chest pain, painful ulcers on leg and hemolytic anemia, diagnosis?

a. Sideroblastic anemia
b. Myeloproliferative disorders
c. Aplastic anemia
d. Sickle cell disease

Ans: **D**

94. A young boy with recurrent symptoms of anemia & intermittent jaundice and cola – colored urine—there is no history of drugs intake, most likely diagnosis?

a. G6PD
b. Autoimmune hemolytic anemia
c. Hereditary spherocytosis

Ans: **A**

95. All are features of paroxysmal nocturnal hemoglobinuria (PNH) except?

a. Hemoglobinuria
b. Hemolytic anemia
c. Positive ham test
d. Hemarthrosis

Ans: **D**

96. A patient presented to you with complain of brown coloured urine for the last 1 year especially early morning. what is the most likely cause?

a. G6PD
b. PNH
c. Nephrotic syndrome
d. CA bladder

Ans: **B**

97. A patient presented with fever and jaundice, found out to have G6Pd deficiency, Treatment?

a. Reassurance
b. Antimicrobials

Ans: **A**

98. Best test for paroxysmal nocturnal hemoglobinuria?

a. Ham's test
b. Sucrose hemolysis test
c. Flow cytometry

Ans: **C**

99. PNH is a disorder of which type?

a. Acquired disorder
b. Inherited

Ans: **A**

100. A patient with PNH with Tender liver. Dx?

a. Hepatic vein thrombosis
b. Hepatic artery thrombosis

Ans: **A**

Radiant Notes

G6PD Deficiency

- X-linked recessive disorder therefore **affects only males**
- Most common form of enzyme deficiency hemolytic anemia
- **Self-limiting disease**
- Normal:
  - G6PD rate limiting enzyme of HMP, normally produces NADPH, which keeps glutathione (GSH) reduced→ which protects RBC'S breakdown by breaking hydrogen peroxide
- Deficiency:
  - ↓G6PD→↓NADPH→↓GSH→hydrogen peroxide oxidizes Hb, which precipitates in the form of **Heinz bodies**→which damage RBC's membrane and causes hemolysis
  - **Heinz bodies** removed from RBC by splenic macrophages→ **Bite cells**
- Causes
  - Anemia is triggered by oxidative stress (fava beans in children, infection, DKA) & medications.
  - Medications— (Mnemonic Hemolysis IS D PAIN)
    - ✓ Isoniazid, Sulfonamides, Dapsone, Primaquine, Aspirin, Ibuprofen, Nitrofurantoin
- Labs:
  - Blood smear shows RBCs with Heinz bodies and bite cells.
  - Reticulocytosis
  - ↓ G6PD level.
- **Mnemonic**: "Stress makes me eat bites of fava beans with Heinz ketchup."

Paroxysmal nocturnal hemoglobinuria (PNH)

- Acquired disorder—↑ complement-mediated RBC lysis
- ↑ Incidence of acute leukemia.
- Venous thrombosis (most common cause of death— e.g. **Budd-Chiari syndrome**)
- Clinical features:
  - Associated with aplastic anemia
  - Triad: **Coombs ⊖ hemolytic anemia, pancytopenia, and venous thrombosis.**
  - Hemoglobinuria: **classically dark-colored urine in the morning Lab test:**
- Labs:
  - 'Flow cytometry demonstrates deficiencies of CD55 and CD59 (**CD55/59 ⊖**) → **Most accurate**
  - Sucrose hemolysis test→ obsolete now
  - Ham's test→ obsolete now
- Treatment: Eculizumab (inactivates C5 and decreases hemolysis).

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101. In which disease, splenectomy carries the best prognosis?

a. Sickle cell anemia
b. Hereditary spherocytosis
c. ITP
d. Thalassemia
e. Acute myeloid leukemia

Ans: **B**

102. True statement regarding hereditary spherocytosis is:

a. Autosomal recessive
b. Reticulocytosis
c. X linked
d. Megaloblastic anemia

Ans: **B**

103. A 37-year-old woman presents to you with intermittent jaundice and left hypochondriac pain. history was very significant for gallstones. Her mother had a similar condition. on examination, she was pale and spleen was palpable. On investigation Hb 10, MCV 70, MCHC 39, Coombs test negative What is your diagnosis?

a. Hereditary deficiency
b. G6PD deficiency
c. Sickle cell disease
d. Autoimmune hemolytic anemia

Ans: **A**

104. A patient presented with fatigue, hypochondriac pain, labs revealed Hb decreased, bilirubin increased Rest normal, Father had the same condition as well

a. Hereditary Spherocytosis
b. Vit b12 deficiency anemia
c. ITP
d. HUS

Ans: **A**

105. Splenectomy of a patient is planned which vaccine should be given prior to splenectomy

a. Hepatitis B
b. BCG
c. Pneumococcal
d. Pentavalent

Ans: **C**

106. A blood film is reported as follows: Howell-jolly bodies, target cells and occasional pappenheimer bodies are seen what is the most likely underlying cause?

a. Iron-deficiency anemia
b. Lead poisoning
c. Myelofibrosis
d. Post-splenectomy

Ans: **D**

107. What is the most common complication in a past splenectomy case?

a. Thrombosis
b. Infection
c. Bleeding
d. Renal failure

Ans: **B**

108. For vaccination for encapsulated organism should be given at least how many weeks before?

a. 6 weeks
b. 4 weeks
c. 2 weeks
d. 1 week

Ans: **C**

109. Which of the following will not occur in massive splenomegaly?

a. Leucopenia
b. Coagulopathy
c. Hypocalcemia
d. Hepatic coma

Ans: **C**

Radiant Notes

Hereditary spherocytosis

- Autosomal dominant
- Due to defect in membrane protein that makes RBC'S spheroid, vulnerable to splenic sequestration and destruction.
- Most common mutation:
  - Ankyrin (most common), spectrin, band-3 and 4
- **Splenomegaly,** aplastic crisis (parvovirus B19 infection), **Gall stones**
- Labs:
  - Peripheral film: **spherocytes→** small, round RBCs with less surface area and no central pallor
  - **Increased MCHC and Negative coomb's test**
  - Osmotic fragility test: spherocytes rupture in hypotonic salt solution

Treatment: Splenectomy

Splenectomy

- It is best to postpone splenectomy until after childhood, as sudden overwhelming fatal infections, usually due to encapsulated organisms such as pneumococci, may occur.
- Splenectomy should be preceded by appropriate immunization and followed by lifelong penicillin prophylaxis
- Following splenectomy, the spherocytes persist but the Hb usually returns to normal as the red cells are no longer destroyed.
- **Prophylaxis**
  - Lifelong Penicillin
    - ✓ Long-term penicillin-V 500 mg 12-hourly (if sensitive, use erythromycin)
  - Vaccination
    - ✓ Vaccinate 2–3 weeks before elective splenectomy.
    - ✓ Vaccinate patients undergoing splenectomy against encapsulated organisms especially (Mnemonic- SHiN)
      - S pneumoniae >> H influenzae type B > N meningitidis)

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110. Mycoplasma causes hemolytic anemia. Which of the following investigation confirms it?

a. LFTs
b. CBC
c. LDH level
d. Retic count

Ans: **C**

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111. Which of the following causes Coomb's positive hemolytic anemia?

a. TTP
b. DIC
c. SLE
d. Paroxysmal nocturnal hemoglobinuria

Ans: **C**

---

112. Which one of the following drugs causes autoimmune hemolytic anemia?

a. levofloxacin
b. Methyldopa
c. Aspirin
d. Carbidopa
e. None of above

Ans: **B**

---

113. Coomb's negative hemolytic anemia occurs in

a. Methyldopa
b. SLE
c. Chronic Lymphocytic Leukemia
d. Paroxysmal nocturnal hemoglobinuria

Ans: **D**

---

114. A patient presented with lymphadenopathy hemolytic anemia & jaundiced, Examination shows mild splenomegaly. P. smear shows spherocytes and coombs test positive, Diagnosis?

a. Chronic Lymphocytic Leukemia
b. Acute Lymphoblastic Leukemia
c. Sideroblastic anemia
d. Sickle cell anemia

Ans: **A**

---

115. Patient with SLE has high reticulocyte count and raised LDH and bilirubin. What test will you perform?

a. Haptoglobin level
b. Direct Coomb's test
c. Antiphospholipid antibodies

Ans: **B**

---

116. Which one of the following is least likely to cause a warm autoimmune hemolytic anemia?

a. Mycoplasma infection
b. Methyldopa
c. Chronic Lymphocytic Leukemia
d. Lymphoma
e. SLE

Ans: **A**

---

117. CLL is associated with

a. Autoimmune hemolytic anemia
b. Aplastic anemia
c. Iron deficiency anemia

Radiant Notes

Autoimmune Hemolytic Anemia (AIHA)

- **Mnemonic: Warm weather is Great, Cold weather is MMMiserable**

Warm Antibody Autoimmune Hemolytic Anemia

- Most common form of autoimmune hemolytic anemia
- IgG-mediated, Active at warm temperature (37 degree)
- Causes:
  - Idiopathic (50% cases)
  - May also be seen in association with **SLE and CLL and with certain drugs (e.g., α-methyldopa)**
- Diagnosis:
  - **Coombs test positive**, spherocytes
- Management
  - The underlying cause should be treated.
  - Steroids (1^{st} line treatment)
  - Splenectomy
    - If prednisone is ineffective or if the disease recurs on tapering the dose
  - Rituximab (2^{nd} line)
  - Immunosuppressive agents
  - High-dose intravenous immune globulin
  -

Cold Antibody Autoimmune Hemolytic Anemia

- IgM-mediated, acute anemia triggered by cold
- Causes:
  - Idiopathic (50% cases)
  - May also be seen in association with CLL, Mycoplasma pneumonia infections, EBV infections, and infectious Mononucleosis
- Management
  - The underlying cause should be treated, if possible.
  - Steroids, alkylating agents and splenectomy are usually ineffective.
  - Rituximab (1^{st} line treatment--DOC)

Ans: **A**

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118. A young age patient taking NSAID's for body pains presented with young female taking analgesics presented with bleeding gums, epistaxis, fever, mild jaundice and hepatosplenomegaly. On investigation Hb 9g/dL, TLC 70,000, thrombocytopenia, Smear also shows immature cells, Diagnosis?

a. Chronic viral hepatitis
b. Acute leukemia
c. Thalassemia minor
d. Aplastic anemia
e. Drug induced anemia

Ans: **B**

119. Patient with high TLC count, megakaryocyte hyperdiploidy and metamyelocytes on peripheral smear. Likely diagnosis

a. AML M7
b. CML
c. ALL
d. CLL

Ans: **A**

120. 22 years old male presented with fever and bleeding, investigation shows presence of blast cells and Auer rods, Diagnosis?

a. Acute Lymphoblastic Leukemia
b. Acute Myelogenous Leukemia
c. Chronic Lymphocytic Leukemia
d. Chronic Myelogenous Leukemia

Ans: **B**

121. Which of the following translocation is associated with acute promyelocytic leukemia?

a. t (9;17)
b. t (15;17)
c. t (9;22)
d. t (8;14)

Ans: **B**

122. A 16-year-old male presented to you in accident and emergency department with complain of fever. weight loss. Weakness and lethargy. his labs show Hb= 5.9 TLC = 35000, PLT = 80000. CXR shows a mass in the mediastinum the most appropriate diagnosis is?

a. Acute Lymphoblastic Leukemia
b. Acute Myelogenous Leukemia
c. Chronic Lymphocytic Leukemia
d. Chronic Myelogenous Leukemia
e. Lymphoma

Ans: **A**

123. A young girl presents with bone pain and tenderness, examination you noticed hepatosplenomegaly. What is the diagnosis?

a. Aplastic anemia
b. Acute Lymphoblastic Leukemia
c. Acute Myelogenous Leukemia
d. Chronic Lymphocytic Leukemia
e. Chronic Myelogenous Leukemia

Ans: **B**

124. Which of the following is characteristic of acute promyelocytic leukemia?

a. Peak incidence in childhood
b. DIC
c. Occurs in old age only

Ans: **B**

Radiant Notes

Acute Lymphoblastic Leukemia (ALL)

- **ALL is the most common malignancy in children.**
- ↑↑ Lymphoblast's (B or T-cell lymphocytes)
- Lymphoblasts have agranular cytoplasm (granular in AML)
- Features:
  - **Bone pain and tenderness, lymphadenopathy, spleen and liver enlargement**
  - **May spread to CNS** (cranial neuropathies, vomiting) **and testes.**
  - T-cell ALL can present as mediastinal mass (presenting as SVC-like syndrome).
- TdT+ (deoxynucleotidyltransferase) positive in both B and T-CELL
- CD10+ (pre-B cells only).
- **t(12;21) → better prognosis**
- **t(9:22) Philadelphia chromosome→poor prognosis.**
- ALL is the form of acute leukemia that is most responsive to therapy
- Associated with Down syndrome
- Good prognostic factors:
  - Younger age
  - WBC <50 × 109/L for B-lineage <100 × 109/L for T-lineage
  - Absence of **Philadelphia chromosome**
  - **t(12;21) presence**

Acute Myelogenous Leukemia (AML)

- AML occurs most often in adults.
- A predominance of myeloblasts and early promyelocytes is characteristic.
- Myeloblasts have granular cytoplasm and stain positive with MPO.
- Features:
  - **Gingival hyperplasia**
  - **Auer rods**→fused azurophilic granules in cytoplasm of myeloblasts
  - Total 8 subtypes; M0 to M8.
  - In which M3 AML (called Acute promyelocytic leukemia) carries good prognosis-- **t(15:17)**
- M3 AML:
  - **Acute promyelocytic leukemia (APML) t(15:17)**
  - Responds to all-trans retinoic acid (vitamin A)
  - DIC is a common presentation
- AML responds to current therapy more poorly than ALL
- Good prognostic factors:
  - **t(15:17)—presence --APML**

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125. A patient is investigated for leukocytosis. Cytogenetic analysis shows the presence of the following translocation: t (9:22). Which haematological malignancy is most strongly associated with this translocation?
   a. Acute Lymphoblastic Leukemia
   b. Acute Myelogenous Leukemia
   c. Chronic Lymphocytic Leukemia
   d. Chronic Myelogenous Leukemia
   e. Burkitt lymphoma

Ans: D

126. Which of the following feature best describes CLL?
   a. Usually a T cell disorder
   b. A disease of children
   c. Responsive to splenectomy
   d. Frequently asymptomatic

Ans: D

127. 65 years old male presented with fever and generalized lymphadenopathy, a diagnosis of chronic lymphocytic leukemia was made, what would be seen on smear?
   a. Lymphocytosis
   b. Eosinophilia
   c. Basophilia
   d. Monocytosis

Ans: A

128. A 60-year-old patient with 8 moqths History of low Hb, mature looking lymphocytes WBC 59× 10^9 and general lymphadenopathy. Diagnosis
   a. Chronic Lymphocytic Leukemia
   b. Chronic Myelogenous Leukemia
   c. Hodgkin lymphoma
   d. Myelofibrosis

Ans: A

129. The smudge cells in the peripheral smear are seen in
   a. CML
   b. CLL
   c. AML
   d. ALL

Ans: B

130. Transformation of CLL to diffuse large B cell lymphoma is known as
   a. Aggressive transformation
   b. Prolymphocytic transformation
   c. Richter syndrome
   d. Lymphoma spill over

Ans: C

131. The haematological disorder which shows BCR-ABL fusion gene is
   a. Polycythemia vera
   b. Von Willebrand disease
   c. Erythroleukemia
   d. Chronic Myeloid leukemia

Ans: D

Hematology & Oncology

Radiant Notes

Chronic Lymphocytic Leukemia (CLL)

- **CLL most common overall leukemia,** old age> 60 years
- **Most common cause of generalized lymphadenopathy**
- **Associated with Autoimmune hemolytic anemia →spherocytes**

- **Richter's syndrome:**
  - Transformation of CLL into more aggressive form, takes the form of diffuse large B-cell lymphoma

- Lab
  - **CBC peripheral smear**
    - Shows inc WBC count With **lymphocytosis**
    - Blast cells less than 5%
  - **Smudge cells** (parachute cells): fragile leukemic cells seen in CLL (lab artefact)
- Mnemonic CLL = Crushed Little Lymphocytes (smudge cells)

- Cytogenetic and immunohistochemistry
  - CD5, CD19 and CD20→positive
  - **CD10→negative**

- **Treatment:**
  - Mnemonic FCR--- Fludarabine + Cyclophosphamide+ Rituximab

Chronic Myelogenous Leukemia (CML)

- CML is a disorder of **middle age** (median age - 55 years).
- Patients usually complain of **fatigue, night sweats, and low-grade fevers** (in absence of any infectious disease)

- **Blast crisis**:
  - Most common cause of death
  - Characterized by transformation to acute leukemia
  - It transforms to AML in 70% cases→poor prognosis
  - It transforms to ALL in 30% cases→good prognosis

- Lab
  - **CBC peripheral smear**
    - Shows inc WBC count
    - **Basophilia and eosinophilia** may be present
    - Increased numbers of blasts are suggestive of accelerated phase or blast crisis.
  - **↓ LAP (leukocyte alkaline phosphatase)**
  - **Philadelphia chromosome t (9:22)**

- Cytogenetics
  - **Philadelphia chromosome t (9:22) always present (95%).**
  - **Absence of Philadelphia chromosome→poor prognosis**

- **Treatment:**
  - TKI's 1st generation→Imatinib
  - Hydroxyurea

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132. Which of the following subtypes of Hodgkin lymphoma carries the best diagnosis?
- a. Mixed cellularity
- b. Nodular sclerosing
- c. Lymphocyte predominant
- d. Lymphocyte depleted

Ans: **C**

133. Poor prognostic factor in Hodgkin lymphoma?
- a. Pruritus
- b. Lymph node mass size
- c. Fatigue
- d. EBV infection
- e. Fever

Ans: **E** ('B' symptoms also imply a poor prognosis)

134. Translocation associated with Burkitt lymphoma?
- a. t (15;17)
- b. t (9;22)
- c. t (8;14)
- d. t (14;18)

Ans: **C**

135. A 36-year-old female presents to you in your clinic. she was much worried about palpable painless swellings. she has experienced night fevers. drenching night sweats and lost 25 pounds of her weight unintentionally. when you examined her, you noticed lymphadenopathy that is not warm, red or tender, what is your diagnosis?
- a. Non-Hodgkin Lymphoma
- b. Hodgkin Lymphoma
- c. CML
- d. CLL
- e. TB

Ans: **A**

136. A young boy presents to you in OPD with history of weight loss and fatigue. examination reveals lymphadenopathy. He explains that it becomes very painful after consumption of alcohol, Diagnosis?
- a. Acute Lymphocytic Leukemia
- b. Acute Myelogenous Leukemia
- c. Hodgkin lymphoma
- d. Non- Hodgkin lymphoma

Ans: **C**

137. 50-year-old asymptomatic patient is found to have palpable masses in groin and axilla. What is the likely diagnosis?
- a. Abscess
- b. CML
- c. Non-Hodgkin's Lymphoma
- d. Hodgkin's Lymphoma

Ans: **D**

138. Hodgkin's lymphoma patient developed facial swelling treatment at this stage?
- a. Chemotherapy
- b. Radiotherapy
- c. Both chemotherapy and radiotherapy

Ans: **C**

Radiant Notes

Hodgkin Lymphoma
- **Localized, single group of nodes, painless, rubbery lymph nodes Cervical/supraclavicular (60-80%),** axillary (10-20%), inguinal (6-12%)
- Constitutional ("B") symptoms: fever (>38), sweats, weight loss (>10% over 6 months)
- **Pel-Ebstein Fever** (high fever for 1-2 wk., followed by an afebrile period of 1-2 wk.)
- **Alcohol pain in HL**
- Contiguous spread (anatomic spread to adjacent nodes)
- Bimodal distribution–young adulthood and > 55 years; more common in men except for nodular sclerosing type.
- **Strongly associated with EBV.**
- **Characterized by Reed-Sternberg cells**
- **Types**

Nodular Sclerosis	Most common More common in females Prognosis= excellent
Mixed Cellularity	2nd Most common More common in males Prognosis= intermediate
Lymphocyte Rich	common in old males Prognosis= good
Lymphocyte Depleted	More common in old males Prognosis= the worst
Lymphocyte Predominant	More common in young males Prognosis= the best

Non-Hodgkin Lymphoma
- **Multiple, peripheral nodes, painless lymphadenopathy (Nodes not warm, red, or tender)**
- **Lymph nodes may be present peripherally or centrally** (in the retroperitoneum, mesentery, and pelvis
- Constitutional ("B") symptoms: but less common than in HL
- **Testis and CNS involvement**
- Burkitt's lymphoma, with characteristic jaw lymphadenopathy and abdominal fullness
- Non-contiguous spread
- **Peak incidence for certain subtypes at 20–40 years old**
- **May be associated with HIV and autoimmune diseases (RA, SLE) & EBV**

Types:
- Burkitt lymphoma
  - t(8;14) —translocation of c-myc (8) and heavy-chain Ig (14)
  - "Starry sky" appearance. Associated with EBV.
- Diffuse large B-cell lymphoma
  - Most common type of non-Hodgkin lymphoma in adults.
- Follicular lymphoma: t (14;18) translocation
- Mantle cell lymphoma: t (11;14)—translocation

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139. A patient having enlarged cervical lymph nodes, FNAC was done which was not diagnostic, what next should be done?
a. Excisional biopsy of lymph nodes
b. Incisional biopsy of lymph nodes
c. Ct scan neck
d. Ultrasound neck

Ans: **A**

140. How to differentiate between absolute and relative polycythemia?
a. RBC mass
b. EPO levels
c. Haematocrit level

Ans: **A**

141. How will you differentiate between primary and secondary polycythemia?
a. JAK2 mutation
b. Haematocrit
c. Red cell mass
d. Erythropoietin level

Ans: **A**

142. A 59-year-old male came with HB 18.0 g/dl on three different occasions. You are suspecting polycythemia; which investigation should be done to differentiate primary with secondary polycythemia?
a. Haematocrit levels
b. Red cell mass
c. Reticulocyte count
d. Erythropoietin levels

Ans: **D**

143. Investigation to differentiate between primary and secondary polycythemia is:
a. Erythropoietin level
b. Splenomegaly
c. Red cell mass
d. Haematocrit

Ans: **A**

144. What is the most useful test to establish diagnosis of Polycythaemia rubra vera?
a. Blood film
b. Red cell mass
c. JAK-2 mutation
d. Bone marrow aspiration

Ans: **C**

145. Which of the following statement is not true regarding polycythemia rubra vera?
a. Due to JAK-2 mutation
b. More likely to develop gout
c. Low dose aspirin is used
d. Presence of thrombocytosis excludes the diagnosis.

Ans: **D**

Radiant Notes

Polycythemia Rubra Vera

- Myeloproliferative Stem cell disorder characterized by elevated RBC mass (erythrocytosis) ± increased white cell and Platelet production
- Clinical features
  - Plethoric appearance
  - Hyperviscosity symptoms: headache, tinnitus, dizziness, blurring of vision & pruritis
  - HTN in a third of patients
  - Pruritus, typically after a hot bath
  - Splenomegaly
  - Haemorrhage (secondary to abnormal platelet function)
- Labs
  - Hb >18.5 g/dl in men, 16.5 g/dl in women
  - Hematocrit above 60%
  - JAK2 mutation (95%) ---most accurate test
  - LAP is increased
  - **↓ EPO (only in this type of polycythemia)**
  - Bone marrow: hypercellular marrow
- Management
  - Venesection - first line treatment
  - Aspirin
  - Hydroxyurea -slight increased risk of secondary leukemia
  - Phosphorus-32 therapy
  - Hyperviscosity: urgent venesection

Secondary Polycythemia

- Causes:
  - Hypoxia→ cardiac disease, pulmonary disease, high altitude
  - Carboxyhemoglobin: smoking
  - Kidney lesions
  - Erythropoietin-secreting tumors (rare)
  - Abnormal hemoglobin's (rare)
  - Diuretics use
- **A secondary cause of polycythemia should be suspected if splenomegaly is absent** and the high hematocrit is not accompanied by increases in other cell lines.
- Treat underlying cause
  - O2 for hypoxemia, CPAP for sleep apnea, surgery for EPO-secreting tumors

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146. Patient with polycythemia developed sudden ascites. Most likely?

a. Hepatic vein thrombosis
b. Portal vein thrombosis
c. Hepatic artery thrombosis

Ans: **A**

147. A 45-year-old male patient of polycythemia presented with abdominal pain, ascites, Jaundice and fluid thrill positive. There is absence of Jugular venous distention. The appropriate diagnosis is?

a. Hepatic vein thrombosis
b. Hepatic artery thrombosis
c. Postal vein thrombosis

Ans: **A**

148. A known case of polycythemia Rubra Vera now presented with abdominal pain, ascites and jaundice, diagnosis?

a. Hepatic carcinoma
b. Hepatic vein thrombosis
c. Primary biliary cirrhosis
d. Intestinal TB

Ans: **B**

149. A Patient presented with headache, dizziness and bleeding, on investigation PLT count 650,000, Hb and TLC normal, treatment?

a. Steroids
b. Tranexamic
c. Hydroxyurea

Ans: **C**

150. A female patient headache having normal HB, mild increased TLC and platelets of 650,000. What is the diagnosis?

a. CML
b. Essential thrombocytosis
c. Polycythemia rubra vera
d. Myelofibrosis

Ans: **B**

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151. 67-year-old presented with right hip pain, there is no past history of trauma, X-ray shows right femoral neck fracture, Investigation shows Na+ 135 mEq/L, Cl 105 mEq/L, HCO3 25 mEq/L, Ca2+ 11.0 mg/dL, Cr 1.9 mg/dL, Hgb 9.5 g/dL, what other test you will do to confirm your diagnosis?

a. Serum Protein Electrophoresis
b. Bone scan
c. PTH
d. DEXA scan

Ans: A

152. 70 years old female with backache, X-ray skull shows lytic lesions, serum Ca 12mg/dL, IgM 18g/L. Diagnosis?

a. Multiple myeloma
b. Monoclonal Gammopathy Of Uncertain Significance
c. Waldenstrom's Macroglobulinemia

Ans: A

153. Which of the following is the most appropriate test for multiple myeloma?

a. Serum protein electrophoresis
b. Urinary protein electrophoresis
c. Bone marrow biopsy
d. Bone scan

Ans: C

154. What is the most useful marker of prognosis in myeloma?

a. Calcium level
b. Bence-Jones protein levels
c. Alkaline phosphatase
d. ESR
e. B2-microglobulin

Ans: E

155. 60-year-old male patient with backache and proteins in urine, Diagnosis?

a. Paget's disease
b. Multiple myeloma
c. Osteoporosis

Ans: B

156. Regarding bone metastasis:

a. 70% of renal tumors presents as metastasis
b. Lesions of multiple myeloma are osteolytic
c. Lesion of prostatic metastasis are osteosclerotic
d. Occur in earlier stage of all tumors
e. Only occur to axial skeleton

Ans: B

157. Patient comes with history of back pain with ESR of 130. Which diagnosis is most likely?

a. Ankylosing spondylitis
b. Vertebral fracture
c. Brucellosis
d. Multiple myeloma

Ans: D

Radiant Notes

Multiple Myeloma

- Plasma cell neoplasm (plasma cell are formed by B-cells)
- In Multiple Myeloma plasma cells are monoclonal which show M-Spike on protein electrophoresis
- Fried egg appearance on histology
- Most common type of monoclonal Ig → IgG (55%), IgA (25%)
- Associated with:
  - Susceptibility to infection (due to reduction in the normal immunoglobulin levels)
  - Severe bone pain (most commonly backache)
  - **Primary amyloidosis (AL)**
  - **M spike on serum protein electrophoresis**
  - Bone marrow: Russell bodies (intracytoplasmic inclusions), Dutcher bodies (intranuclear inclusions)
- **Clinical features**: (Think CRAB)
  - HyperCalcemia
  - Renal injury (due to Ig light chains in urine--Bence Jones protein, and due to hypercalcemia)
  - Anemia (bone marrow infiltration with plasma cells)
  - **Bone lytic lesions/Back pain** (spinal cord compression & ostelytic lesions usually seen in the spine, skull, long bones and ribs.)
  - Neurologic: cord compression; POEMS (Polyneuropathy, Organomegaly, Endocrinopathy, M protein, Skin changes) syndrome
- Prognosis:
  - **β2-microglobulin and LDH levels reflect tumor burden**
- Diagnosis
  - All 3 of the following are needed for a diagnosis of Myeloma in symptomatic myeloma:
    - ✓ Monoclonal plasma cells in marrow: at least 10%
    - ✓ Monoclonal protein in serum or urine (but if non-secretory at least 30% monoclonal plasma cells in the bone marrow)
    - ✓ Myeloma-related organ or tissue impairment (hypercalcemia, anemia and lytic bone lesions)
  - Diagnosis of asymptomatic myeloma: requires both of the following:
    - ✓ Monoclonal plasma cells in the marrow: at least 10%, OR monoclonal protein at least 30 g/L
    - ✓ Absence of myeloma related organ/tissue dysfunction

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158. A young girl with increased menstrual bleeding and multiple petechiae all over her body. On examination Spleen was not palpable, her CBC shows PLT =20,000 rest normal. Bone marrow biopsy shows increased megakaryocytes while other cellular components are normal. your diagnosis?

a. TTP
b. HUS
c. ITP
d. DIC

Ans: **C**

159. A female patient with petechial hemorrhages presents to you in OPD. CBC shows Hb normal, TLC count Normal while PLT 19,000, which test helps to reveal the diagnosis?

a. APTT
b. Bone marrow biopsy
c. HESS test
d. Tourniquet test
e. Platelet function

Ans: **B**

160. First presentation in females with ITP:

a. Menorrhagia
b. Bone tenderness
c. Osteomalacia
d. Purpura

Ans: **A**

161. A female patient with lethargy and petechial rashes with gum bleed. Most appropriate investigation?

a. Clot retraction time
b. PT
c. BT
d. APTT

Ans: **C**

162. Which one of the following is the least effective treatment in ITP?

a. Immunoglobulins
b. Corticosteroids
c. Splenectomy
d. Platelet transfusion

Ans: **D**

163. A patient diagnosed case of ITP, presented with nasal bleed and hematuria, platelet count 18000, treatment?

a. Prednisolone
b. IVIG
c. Splenectomy

Ans: **B**

164. Patient presented with ITP and oozing gums, platelet count 80,000, treatment?

a. IVIG
b. Prednisolone
c. Platelet transfusion

Ans: **B**

165. CBC of a patient who is a diagnosed case of ITP, shows platelets count of 45,000, but he is asymptomatic, what you will do next?

a. Observe
b. Give steroid
c. Do splenectomy
d. Platelets transfusion

Ans: **A**

166. A pregnant female came to routine checkup. Labs shows platelet count of 74000. There is no active bleeding. According to the patient she was transfused platelets in her last pregnancy. There was no history of any such complaints in between the two pregnancies. What is the diagnosis

a. Immune thrombocytopenia
b. Gestation thrombocytopenia
c. Thrombotic thrombocytopenia
d. Thrombophilia

Ans: **B**

Radiant Notes

Immune Thrombocytopenia (ITP)

- ITP is an autoimmune condition, autoantibodies, most often directed against the platelet membrane glycoprotein IIb/IIIa,
- Mostly idiopathic, although it can be associated with
  - Connective tissue disease (such as SLE).
  - Medications: **HANDER**
    - ✓ **H**eparin, **A**cetaminophen, **A**miodarone, **A**mphotericin B, H2-**A**ntagonists, **N**SAIDs, **E**thambutol, **R**ifampicin
  - Infections (such as hepatitis C virus and HIV infections).
- Clinical Presentation
  - Easy bruising, purpura, epistaxis and menorrhagia are common
  - Physical examination is normal except for evidence of bleeding.
  - **Splenomegaly is rare.**
- Investigations
  - PT and aPTT: normal
  - **Platelet count ↓, bleeding time ↑**
  - Bone marrow aspirate and biopsy **(megakaryocytes)**
- Treatment (Ref MTB step 2 page 315)

No bleeding, count >30,000	No treatment
Mild bleeding, count <30,000	Glucocorticoids
Severe bleeding (GI/CNS), count <10,000	IVIG, Anti-Rho (anti-D)
Recurrent episodes, steroid dependent	Splenectomy
Splenectomy or steroids not effective	Romiplostim or eltrombopag, rituximab, azathioprine, cyclosporine, mycophenolate

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167. A 64-year-old female is brought to the emergency department by her family, who are concerned about her increasing confusion & fever over the past 2 days. Investigation reveals: Hb 9.6 g/dL platelets 65 × 109, WCC 11.1 × 109, Urea 23.1 mmol/L creatinine 336 pmol/L what is the most likely diagnosis?
    a. Hemolytic uremic syndrome
    b. Wegener's granulomatosis
    c. Thrombotic thrombocytopenic purpura
    d. Idiopathic thrombocytopenic purpura

Ans: C

168. Which of the following features is least recognized in TTP?
    a. Fever
    b. MAHA
    c. Renal failure
    d. Thrombocytopenia
    e. Livedo reticularis

Ans: E

169. A patient with TTP would have?
    a. Anemia due to blood loss
    b. Microangiopathic hemolytic anemia
    c. Decreased bleeding time
    d. Platelet fragments

Ans: B

170. Most reliable finding in peripheral smear in TTP?
    a. Schistocytes
    b. Burr cells
    c. Smudge cells

Ans: A

171. A boy ate a beef burger, coke and fries. later on he developed nausea and abdominal discomfort. Now he presents with hematuria and oliguria. what is the likely cause?
    a. Hemolytic-uremic syndrome
    b. Post streptococcal glomerulonephritis
    c. Wegener's granulomatosis.

Ans: A

172. Investigation of choice in HUS is:
    a. Blood culture
    b. Peripheral smear
    c. Urine Culture
    d. Stool culture

Ans: D

173. Pregnant woman presented with fever confusion, creatinine, creatinine 5.3, Hb 7g/dL, Diagnosis?
    a. Hemolytic uremic syndrome
    b. HSP
    c. Thrombotic thrombocytopenic purpura
    d. Idiopathic thrombocytopenic purpura

Ans: C

Radiant Notes

Thrombotic thrombocytopenic purpura (TTP)

- **Deficiency of von Willebrand factor (vWF) metalloprotease (ADAMTS 13).**
- Insufficient ADAMTS-13 activity allows vWF multimers to accumulate in microcirculation which leads to platelet aggregation/thrombocytopenia and hemolysis of RBCs
- Clinical features ---**(PENTAD)**
    - Thrombocytopenia
    - MAHA (microangipathic hemolytic anemia)
    - Neurological symptoms: headache, confusion, focal defects, seizures
    - Renal failure
    - Fever
- Management:
    - Plasma exchange ± steroids (is the mainstay of the treatment)
    - FFP can be given until Plasmapheresis
    - Immunosuppressants (in chronic TTP decrease the chance of relapse.)
    - **No antibiotics - may worsen outcome- No Platelet transfusion is deleterious**

Hemolytic-uremic syndrome (HUS)

- Shiga toxin (**E. coli serotype O157:H7, Shigella dysentry**) in 90%
- Some cases: heritable deficiency in function of complement regulatory proteins
- ***Initial presentation of abdominal pain and diarrhea, followed by bloody diarrhea***
- Clinical features ---- **TRIAD**
    - Thrombocytopenia
    - MAHA
    - Renal failure **(more marked in HUS)**
- Management:
    - Supportive therapy (fluids, RBC transfusion, nutrition, dialysis etc.)

Lab investigation for both:

- CBC and blood film ----**decreased platelets and schistocytes**
- **PT, aPTT, fibrinogen ---- normal**
- Markers of hemolysis----increased unconjugated bilirubin, increased LDH, decreased haptoglobin
- **Negative Coombs test**
- Creatinine, urea, to follow renal function
- Specific for HUS
    - Stool culture OR Stool assays for E coli
- Specific for TTP
    - Reductions in ADAMTS-13 activity

Important clues

- In TTP, the coagulation and D-dimers are usually normal: this can be used to differentiate TTP from DIC.
- In DIC there is the MAHA with thrombocytopenia, ↑ PT, ↑APTT, ↑D-dimers, ↑FDP

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174. A patient presented with fits and low-grade fever, labs revels raised unconjugated bilirubin, Cr 6, Hb 5g/dL, Diagnosis?

a. Hemolytic uremic syndrome
b. Thrombotic thrombocytopenic purpura
c. Idiopathic thrombocytopenic purpura
d. Evan syndrome

Ans: **B**

175. In DIC, Diagnosis is done by?

a. PT
b. APTT
c. FDPs
d. Fibrinogen

Ans: **C**

176. Which one of the following Indicate severity of DIC?

a. Dec Plat Level.
b. Dec Fibrinogen level
c. Inc FDP
a. Inc APTT
b. Inc PT and APTT

Ans: **B**

177. Pregnant female has single vaginal delivery at home in village. After delivery she complains of vaginal and gum bleed. Her platelets and Hb were low and TLC raised, PT and APTT prolong. Diagnosis

a. DIC
b. Hemolytic uremic syndrome
c. Thrombotic thrombocytopenic purpura
d. Idiopathic thrombocytopenic purpura

Ans: **A**

178. A patient with fever having Fibrinogen Decreased, FDP increased, treatment?

a. Plasmapheresis
b. FFPS
c. Whole blood

Ans: **B**

179. Multiple traumata after accident developed bleeding and APTT PT prolonged, diagnosis?

a. Hemolytic uremic syndrome
b. Thrombotic thrombocytopenic purpura
c. Idiopathic thrombocytopenic purpura
d. DIC

Ans: **D**

180. A patient presents to you in OPD with Hb = 6, PLT =10,000. Her PT, APTT are raised she is diagnosed as a case of DIC , what is the most accurate management ?

a. Platelets & FFP
b. Vitamin K
c. Antibiotics

Ans: **A**

181. A patient with APTT deranged. Mixing test was done and with normal plasma aPTT became normal, but with aged plasma and adsorbed plasma aPTT still deranged. What is the factor missing?

a. Factor 8
b. Factor 9
c. Factor 7
d. Factor 11.

Ans: **B**

182. A patient in ICU admitted with severe sepsis, on 3rd day investigation revels Hb 8g/dL, PT 25 sec, aPTT 60 sec, Diagnosis?

a. vWD
b. ITP
c. TTP
d. DIC

Ans: **D**

183. Pregnant lady presented with low platelets, anemia, fever, ALT 140, ALP raised?

a. HELLP syndrome
b. Acute fatty liver of pregnancy
c. Intrahepatic cholestasis

Ans: **A**

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184. **Which of the following is not a feature of von Willebrand disease?**
   a. Hemarthrosis
   b. Prolonged bleeding time
   c. Decreased factor VII level
   d. Decreased factor VII antigen

Ans: **A**

185. **Bleeding from any site occurs in deficiency of which vitamin?**
   a. Vitamin A
   b. Vitamin E
   c. Vitamin C
   d. Vitamin K

Ans: **D**

186. **Which one of the following is the most common presentation of Haemophillia A?**
   a. Hematuria
   b. Hemarthrosis
   c. Hematemesis
   d. Hemoptysis

Ans: **B**

187. **A patient of Haemophillia needs urgent blood transfusion but factor VIII concentrates are not available. your next choice of blood product will be?**
   a. FFPs
   b. Cryoprecipitate
   c. Platelet concentrate
   d. Whole blood
   e. Packed RBCs

Ans: **B**

188. **A young patient presented with knee joint swelling and effusion. cousin also had a similar disease. screening test?**
   a. PT
   b. BT
   c. APTT

Ans: **C**

189. **Diagnostic test for Haemophillia?**
   a. Dec factor XI
   b. Dec factor VIII
   c. Dec factor VIII + vWB antigen
   d. Platelet count
   e. PT

Ans: **B**

190. **A 2-year-old boy has been brought to the hospital for circumcision. There is history of excessive bleeding from the umbilical stump at the time of birth. Two cousins bleed profusely after circumcision by surgeon. The blood test most likely to give a clue to the diagnosis is?**
   a. PT
   b. APTT
   c. BT
   d. Peripheral smear

Ans: **B**

191. **Which factor is deficient in Haemophillia A?**
   a. IX
   b. VII
   c. VIII
   d. Von Willebrand factor

Ans: **C**

Radiant Notes

Haemophillia

- Hemophilia A: deficiency of factor VIII →↑ PTT; X-linked recessive.
- Hemophilia B: deficiency of factor IX →↑PTT; X-linked recessive.
- Hemophilia C: deficiency of factor XI →↑PTT; autosomal recessive.
- **Characteristics include bleeding into muscles, subcutaneous tissues, and joints (hemarthroses).**
- Treatment:
  - Desmopressin & FFP'S
  - Antifibrinolytic agents—Tranexamic acid
  - Factor VIII concentrate (A); factor IX concentrate (B); factor XI concentrate (C).

Von Willebrand Disease

- Autosomal dominant, (type 3 is autosomal recessive)
- **most common inherited bleeding disorder**
- ↓ vWF → defect in platelet-to-vWF adhesion → Defect in platelet plug formation
- Treatment:
  - Tranexamic acid (anti-fibrinolytic drug) for mild bleeding
  - Desmopressin (DDAVP):
  - vWB factor concentrate would be reserved as second line treatment to DDAVP.
  - factor VIII concentrate

Disorder	PT	aPTT	Platelet count	Bleeding time
Vit K def	↑↑	↑	Normal	Normal
Haemophillia	Normal	↑↑	Normal	Normal
vWD	Normal	↑↑	Normal	↑

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192. A 3-year-old boy presents to you in emergency room with hemarthrosis. his CBC shows Hb 11g/dL, TLC 10, PLT 220, PT 11 sec, APTT 80 sec, factor VIII activity is normal what will be the most likely diagnosis?

a. vWB disease
b. Haemophillia A
c. Haemophilia B
d. APLS
e. None of the above

Ans: C

193. In von Willebrand disease, which test will you advise?

a. PT
b. APTT and bleeding time
c. PT and APTT
d. PT, APTT, Ct

Ans: B

194. All of the following are the features of vWD excepts?

a. Hemarthrosis
b. Prolonged bleeding time
c. Dec factor VIII level

Ans: A

195. A young boy presented to you in accident and emergency department with complain of epistaxis. his coagulation profile reveals BT 15 minutes, PT 12 sec, APTT 50 sec, what is your diagnosis?

a. Von Willebrand Disease
b. Haemophillia A
c. Haemophillia B
d. vitamin K deficiency

Ans: A

196. 5 years old child has bleeding after hemorrhoid surgery. Labs show, PT normal; bleeding time normal, platelets normal. What test will you advise?

a. Lupus antibodies
b. ANA
c. Factor VIII level

Ans: C

197. Patient of Von Willebrand Disease having hematoma after fracture of neck of femur. How will you manage?

a. Cryoprecipitate
b. Desmopressin
c. Factor VII concentrate
d. Fresh frozen plasma

Ans: B

198. Coagulation screen of young male patient reveal normal platelet, increased of bleeding time and APTT. Diagnosis?

a. Von Willebrand Disease
b. Haemophilia A
c. DIC
d. Haemophilia B

Ans: A

199. Increased APTT not corrected by plasma. It indicates?

a. Factor VII deficiency
b. Heparin
c. Von Willebrand Disease
d. Vit K deficiency

Ans: C

200. A boy with Prolonged PT with normal platelets and aPTT. which is most appropriate.

a. Intrinsic pathway defect
b. extrinsic pathway defect
c. Coagulation disorder.

Ans: C

201. 30-year-old young boy is complaining lethargy, petechiae and gums bleed. Most appropriate investigation to reach the Dx?

a. BT
b. Clot retraction time
c. PT
d. APTT
e. Fibrinogen level

Ans: A

202. Platelets release which factor?

a. Plasminogen
b. Serotonin
c. Bradykinin

Ans: B

203. A 34-year-old man is a known case of vWD asks for advice, he is going to have tooth extraction next week. which of the following is most appropriate management to reduce the risk of bleeding?

a. Mefenamic acid
b. Vitamin K
c. Desmopressin
d. Factor VIII concentrate

Ans: C

204. The best indicator of platelet function is

a. Prothrombin time
b. Bleeding time
c. Clot retraction time

Ans: C

205. Haemophiliac patient wants to have a tooth extraction. Test you will do?

a. APTT
b. BT

Ans: A

206. A patient develops prolongation of PT and APTT with normal platelet count after administration of antibiotic. What should be given in treatment

a. Cryoprecipitate
b. Desmopressin
c. Vitamin k

Ans: C

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207. A patient with a history of recurrent thromboembolic events develops a deep vein thrombosis despite full anticoagulation with heparin. Which one of the following causes of thrombophilia is associated with resistance to heparin?
   a. Protein S deficiency
   b. Antithrombin III deficiency
   c. Protein C deficiency
   d. Lupus anticoagulant

Ans: B

208. A 25 years old female presents to you in OPD history of recurrent abortions her labs show increased APTT (85) what will be your diagnosis?
   a. Haemophilia
   b. VWB disease
   c. Malignancy
   d. Antiphospholipid antibody syndrome

Ans: D

209. A patient developed DVT during pregnancy, she had a significant history of OCPs use in the past. what is the cause?
   a. Protein C deficiency
   b. Protein 5 deficiency
   c. Antithrombin 3 deficiency
   d. Factor V Leiden deficiency

Ans: D

210. A young girl of right leg DVT presents to you in OPD, she has normal PT and raised APTT which doesn't respond to FFP, what you think she will have:
   a. APLS
   b. Protein C deficiency
   c. TTP
   d. DIC

Ans: A

211. A 47-year-old female with SLE has prolonged APTT. she is more prone to develop:
   a. Bleeding from any site
   b. Recurrent attacks of both arterial and venous thrombosis
   c. Recurrent DVT
   d. Recurrent Fits

Ans: B

212. To diagnose APLs, screening is by:
   a. PT
   b. APTT
   c. FDPs
   d. Serum fibrinogen level

Ans: B

213. For diagnosis of antiphospholipid syndrome
   a. Anti-beta 2 glycoprotein
   b. Anticardiolipin antibody
   c. Lupus anticoagulant

Ans: B

214. Patient started on Warfarin developed black lesion on buttocks?
   a. Abnormal factor v
   b. Protein c deficiency
   c. Antithrombin 3 deficiency

Ans: B

Radiant Notes

Factor V Leiden

- This is the most frequent cause of hereditary thrombophilia (hereditary thrombophilia is prothrombotic familial syndrome occurring most often in adolescents or young women)
- This is an abnormal factor V protein with a specific mutation that alters the cleavage site targeted by APC.
- The mutation prevents the cleavage and inactivation of the mutant factor Va by APC, a phenomenon referred to as "**hereditary resistance to activated protein C**".

Antiphospholipid antibody syndrome

- This prothrombotic disorder is characterized by autoantibodies directed against a number of protein antigens complexed to phospholipids.
- 1° or 2° autoimmune disorder (**most commonly in SLE**).
- Diagnose based on clinical criteria including history of thrombosis (arterial or venous) or **spontaneous abortion** along with laboratory findings
- Lab findings:
  - Lupus anticoagulant (↑aPTT),
  - Anticardiolipin antibody
  - anti-β2 glycoprotein antibodies.
- Treatment:
  - Anticoagulation
    - Warfarin to maintain an INR of 2.0-3.0.
    - Guidelines indicate that patients with APS should be treated with anticoagulation for life.

Important points
- Anticardiolipin antibody, can cause a false positive serologic test for syphilis.
- Only lupus anticoagulant prolonged APTT that does not correct when mixed with normal plasma.

Protein C or S deficiency

- ↓ Ability to inactivate factors Va and VIIIa.
- ↑ Risk of thrombotic skin necrosis with haemorrhage after administration of warfarin. If this occurs, think protein C deficiency.

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215. Risk factor for developing bladder cancer?

a. Beryllium exposure
b. Aniline dye exposure
c. Aflatoxin exposure

Ans: **B**

216. Which one of the following cancers mostly causes mets in brain?

a. Testicular CA
b. Breast CA
c. Lung CA
d. Ovarian CA

Ans: **A**

217. A 68 year old female underwent mastectomy due to breast cancer about 2 years back . which tumor marker is useful for disease monitoring?

a. CA 19-9
b. CA 125
c. CA 15-3

Ans: **C**

218. Which one of the following cancers is not associated with occupation?

a. Bladder CA
b. Breast CA
c. Lung CA
d. Renal cell CA

Ans: **B**

219. How to monitor the patient having colorectal carcinoma?

a. CA 125
b. CA 19-9
c. CA 15-3
d. CEA

Ans: **D**

220. Tumor marker for Ovarian Carcinoma

a. CA 19-9
b. CA 15-3
c. CEA
d. CA 125

Ans: **D**

221. All are markers for osteoblastic activity except

a. Hydroxyproline
b. Alkaline phosphatase
c. Osteocalcin
d. Bone scan

Ans: **A**

222. A young girl presented with fatigue and weight loss. O/E she had ascites, right sided pleural effusion and abdomino-pelvic mass. U/S confirmed a mass in ovary. Which marker is likely to be raised?

a. Ca-125
b. CA 19-9
c. CA 15-3
d. CEA

Ans: **A**

223. Which of the following tumor marker is positive in 60% pancreatic cancer, 80% in colon cancer and in cholangitis?

a. CA 19-9
b. CA 15-3
c. CEA
d. CA 125

Ans: **C**

Radiant Notes

Carcinogens

Carcinogen	Organ→Example
Aromatic amines (e.g., benzidine,) Aniline dye	❖ Bladder →Transitional cell carcinoma
Arsenic	❖ Liver → Angiosarcoma ❖ Lung → Lung cancer ❖ Skin → Squamous cell carcinoma
Asbestos	❖ Lung→Bronchogenic carcinoma > mesothelioma
Cigarette smoke	❖ Bladder → Transitional cell carcinoma ❖ Esophagus →Squamous cell carcinoma/adenocarcinoma ❖ Larynx→ Squamous cell carcinoma ❖ Lung → Squamous cell and small cell carcinoma
Aflatoxins (Aspergillus)	❖ Liver → Hepatocellular carcinoma
Vinyl chloride	❖ Liver Angiosarcoma

Tumor Markers

Marker	Associated Cancer
Alkaline phosphatase	❖ Bony or liver metastasis ❖ Paget disease of bone
α-fetoprotein	❖ Hepatocellular carcinoma. ❖ Yolk sac (endodermal sinus) tumor ❖ Mixed germ cell tumor.
β-hCG	❖ Hydatidiform moles ❖ Choriocarcinomas (Gestational trophoblastic disease) ❖ Testicular cancer
CA 15-3	❖ Breast cancer
CA 19-9	❖ Pancreatic adenocarcinoma
CA 125	❖ Ovarian cancer
CEA	❖ Colorectal cancer ❖ Pancreatic cancer. ❖ Minor association with breast cancer
PSA	❖ Prostate cancer

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224. Which one of the following is the most common malignancy of small intestine?

a. Lymphoma
b. Sarcoma
c. Carcinoid
d. Adenocarcinoma
e. Adenoma

Ans: D

225. Which one of the following is the most common tumor of mediastinum?

a. Metastatic tumor
b. Melanoma
c. lymphoma
d. Thymoma

Ans: D

226. A young lady with history of severe bleeding after hernia repair. no significant family history. she was only one son. her PT, APTT levels are within normal range. what do you think is the reason of bleeding?

a. Factor 8 deficiency
b. Factor 12 deficiency
c. Factor 13 deficiency
d. VWB factor deficiency

Ans: C

227. A 30 years old man with Hodgkin lymphoma after chemotherapy complaining of nausea, body aches and pain. his labs show Na 140, urea 200, Cr 3.2, Ca 10.5 Uric acid 10 Treatment?

a. NaHCO3
b. Ca gluconate
c. Allopurinol
d. Rehydration
e. allopurinol and rehydration

Ans: E

228. Patient's blood CP shows more than 3% eosinophils what is the likely diagnosis?

a. Lymphoma
b. Asthma
c. ABPA
d. Tropical eosinophilia

Ans: D

229. An 18 years old man who is known to have Sickle cell disease is admitted to hospital with lethargy. blood tests show HB 4.7 g/Dl, Retics 0.3% what is most likely explanation for these findings?

a. Hemolytic crisis
b. Sequestration crisis
c. Parvovirus infection

Ans: C

230. A 33-year old male patient with a history of recurrent nose bleeds, iron-deficiency anemia and dyspnea is found to have a pulmonary AV malformation on pulmonary angiography. What is the likely underlying diagnosis?

a. Haemophillia A
b. Hereditary hemorrhagic telangiectasia
c. Mantle cell lymphoma
d. Wegener's granulomatosis

Ans: B

231. An elderly patient with multiple petechiae on thighs. he is otherwise normal, diagnosis?

a. Vitamin K deficiency
b. Vitamin C deficiency
c. Protein S deficiency
d. Protein C deficiency

Ans: B

232. 3 weeks of IV antibiotics given and now presented with bleeding what could be the causes?

a. Vitamin K def
b. Vitamin C def.
c. B12 deficiency
d. Low platelets count

Ans: A

233. Which of the following is not a cause of purpura?

a. ITP
b. Low platelets
c. Vitamin D deficiency
d. Vitamin C deficiency

Ans: C

234. Permanent disability after hemolytic reaction is:

a. Renal failure
b. Heart failure
c. Kernicterus
d. Hepatitis

Ans: C

235. A person is living on high altitude. His Hb is 17 gm/dL. When he come to sea level, he developed dyspnea

a. Pulmonary edema
b. Methemoglobinemia
c. Secondary polycythemia

Ans:

- ✓ Included this question as it was repeated twice in recent 2021 papers--- But none of the options make sense---
- ✓ Included this as someone might remember proper options for it

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Chapter: 7 Neurology

1. Patient woke up suddenly at night due to headache and red eye
    a. Cluster headache
    b. Migraine
    c. Tension headache

Ans: A

2. Lady of young age presented with headache completely surrounding the head. She explains that it started after the death of a relative in family?
    a. Cluster headache
    b. Tension headache
    c. Migraine

Ans: B

3. A patient presented to emergency department with headache. He had a red left eye with lacrimation. What will you suspect?
    a. Tension headache
    b. Cluster headache
    c. Migraine
    d. Trigeminal neuralgia

Ans: B

4. A patient presented with headache on and off for past 10 years in temporal and frontal region, Diagnosis?
    a. Cluster headache
    b. Migraine
    c. Tension headache

Ans: C

5. A patient presenteAnsd with headache, dysarthria double vision, vertigo and ataxia (some recalled it as migraine with stroke)?
    a. Basilar migraine
    b. Tension headache
    c. Cluster headache

Ans: A

6. A 24-year woman presents with tingling and twitching of her fingers followed by throbbing unilateral headache. What is the most likely diagnosis?
    a. Tension headache
    b. Migraine
    c. Cluster headache
    d. TIA

Ans: B

7. A patient presented with headache and red eye with ptosis, what is your diagnosis?
    a. Cluster headache
    b. Glaucoma
    c. Cavernous sinus thrombosis
    d. Migraine

Ans: A

Radiant Notes

Headaches

- **Cluster headache**
    - Localization---unilateral
    - Duration- - 15 min – 3-hour repetitive
    - Intense pain around one eye accompanied by redness, lacrimation, lid swelling
    - Miosis and ptosis in a minority (post ganglionic Horner Syndrome) ---transient
    - Treatment:
        - Acute: sumatriptan, 100% O2
        - Prophylaxis: verapamil
- **Tension headache**
    - Localization--- Bilateral
    - Duration- - > 30 min (typically 4–6 hours); constant
    - Triggers
        - Depression, Anxiety, Sleep deprivation
    - Steady, "band-like" pain. No photophobia or phonophobia, No aura.
    - Management:
        - Acute: analgesics, NSAIDs, acetaminophen
        - Prophylaxis: TCAs (eg, amitriptyline)
- **Migraine headache**
    - Localization--- Unilateral
    - Duration------- 4-72 hours
    - Triggers
        - Noise/light, Caffeine/alcohol, Hunger, Stress, Sleep deprivation
    - Pulsating headache pain with nausea, photophobia, or phonophobia.
    - It can occur as aura or without aura
    - Aura: An aura is a perceptual disturbance, manifests as the perception of a strange light, an unpleasant smell, or confusing thoughts or experiences
    - Clinical features: Mnemonic POUND
        - Pulsatile, One-day duration, Unilateral, Nausea, Disabling
    - Management:
        - Avoid triggers, NSAIDs, 5-HT1 agonists (triptans)
        - Prophylaxis: Propranolol, Sodium valproate

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Neurology

8. Major risk factor for stroke?

a. Diabetes
b. Smoking
c. Hypertension
d. Obesity

Ans: **C**

9. 65-year-old male comes in ER with left sided weakness of 12 hours duration. CT brain is normal. What is the best treatment of the patient?

a. Alteplase
b. Clopidogrel
c. Dipyridamole
d. Heparin

Ans: **B**

10. Test needed to be done before giving tPA (tissue plasminogen activator) in patient with stroke?

a. ABGS
b. CXR
c. LFT's
d. Blood glucose
e. Occult blood

Ans: **D**

✓ Blood glucose is often elevated in acute stroke, and higher admission glucose levels are associated with larger lesions, greater mortality and poorer functional outcome. In patients treated with thrombolysis, hyperglycemia is associated with an increased risk of hemorrhagic transformation of infarcts.

11. A female presented in ER with altered level of consciousness and weakness, according to her family she was fine 4 hours ago, Ct scan shows middle cerebral infarct, treatment?

a. IV alteplase
b. IV streptokinase
c. Warfarin

Ans: **A**

12. What is the investigation of choice in patient having TIA?

a. CT angiography
b. Carotid Doppler
c. ECG
d. Echocardiography

Ans: **A**

13. A patient presented with TIA, carotid Doppler shows 30% stenosis, which of the following is the treatment for this patient?

a. Surgery
b. Aspirin alone
c. Endarterectomy
d. Heparin

Ans: **B**

Radiant Notes

Ischemic Stroke

- Acute blockage of vessels → disruption of blood flow and subsequent ischemia → causing **Liquefactive necrosis.**

- NICE guidelines on Stroke
  - Blood pressure should not be lowered in the acute phase unless there are complications e.g. Hypertensive encephalopathy
  - **Aspirin 300mg** orally or rectally should be given as soon as possible if a hemorrhagic stroke has been excluded
  - **Secondary prevention: Clopidogrel**
  - With regards to atrial fibrillation, the RCP state: **'anticoagulants should not be started until brain imaging has excluded hemorrhage, and usually not until 14 days** have passed from the onset of an ischemic stroke'
  - If the cholesterol is > 3.5 mmol/l patients should be commenced on a statin. Many physicians will delay treatment until after at least 48 hours due to risk of hemorrhagic transformation
  - **Thrombolysis should only be given if: It is administered within 4.5 hours of** onset of stroke symptoms (unless as part of a clinical trial)
  - Hemorrhage has been definitively excluded (i.e. Imaging has been performed)
  - **Alteplase is currently recommended by NICE**

Transient Ischemic Attacks (TIAs)

- These brief episodes of impaired neurologic function are caused by a temporary disturbance of cerebral circulation.
- TIA usually last only a few minutes but may persist for up to 24 hours (but not more than 24 hours)
- Amaurosis fugax (an example of a TIA): transient, **curtain-like loss of sight in ipsilateral eye due to microemboli to the retina**

With regards to carotid artery endarterectomy

- Recommend if patient has suffered stroke or TIA in the carotid territory and are not severely disabled
- **Should only be considered if carotid stenosis > 70% according ECST** criteria**

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14. 60 years old male presented with transient loss of vision in one eye, describing it as curtain falling off in front of the eye, investigation?
a. Echocardiography
b. EEG
c. Carotid doppler

Ans: A

15. A patient suffered from TIA, carotid doppler was done which showed 70% stenosis in carotid, treatment?
a. Heparin and observe
b. Endarterectomy
c. Aspirin 150mg

Ans: B

16. A male patient middle aged suddenly develops dysarthria, right sided Horner syndrome, loss of sensation on right side of face and contralateral body and right sided ataxia, Diagnosis?
a. Lateral pontine syndrome
b. Posterior inferior cerebellar artery syndrome
c. Posterior cerebral artery stroke

Ans: B

17. Patients comes with deviation of tongue to right side. Decreased sense of touch and vibrations, the artery commonly involved in brain is:
a. PICA
b. AICA
c. Anterior Spinal
d. Posterior Cerebral
e. Superior Cerebral Artery

Ans: C

18. Patient having right side burning pain after stroke, which lobe involved
a. Frontal
b. Temporal
c. Thalamus

Ans: C

19. A patient with previous spells of diplopia, ataxia, dysarthria and dizziness become acutely comatose. Most likely cause?
a. Basilar artery thrombosis
b. Subarachnoid hemorrhage
c. Carotid occlusion
d. Cerebellar hemorrhage
e. Pontine hemorrhage

Ans: A

20. A patient has Aphasia & Facial nerve palsy on same side. Which artery is most likely blocked?
a. Middle cerebral artery
b. Posterior inferior cerebellar artery
c. Anterior inferior cerebellar artery

Ans: A

Radiant Notes

Neurology

Effect of Strokes In Relation to Artery

Artery	Features
Middle cerebral artery	❖ Contralateral paralysis and sensory loss ❖ Contralateral homonomous hemianopia ❖ Aphasia o Temporal lobe (Wernicke area) o Frontal lobe (Broca area).
Anterior cerebral artery	❖ Contralateral paralysis and sensory loss
Anterior spinal artery	❖ Contralateral paralysis ↓contralateral proprioception. ❖ Ipsilateral hypoglossal dysfunction → **tongue deviates ipsilaterally** ❖ e.g. on right side artery lesion → tongue deviated towards right
Posterior inferior cerebellar artery	❖ Lateral medullary syndrome (aka Wallenberg syndrome, posterior inferior cerebellar artery syndrome "PICA") o Ipsilateral→ Ataxia, nystagmus o Ipsilateral→ facial pain and temperature loss o Contralateral→ pain and temperature loss ❖ Dysphagia, hoarseness, ↓gag reflex, Vomiting, vertigo, nystagmus ❖ Ipsilateral Horner syndrome
Anterior inferior cerebellar artery	❖ Lateral pontine syndrome o Ipsilateral →Ataxia, nystagmus o Ipsilateral → **facial paralysis** (↓ lacrimation, ↓ salivation, ↓ taste from anterior 2/3rd of tongue) **and deafness** o Contralateral → pain and temperature loss ❖ Ipsilateral Horner syndrome
Posterior cerebral artery	❖ Contralateral hemianopia with macular sparing

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Neurology

21. Middle age patient with vertigo, vomiting, left sided weakness, right side pain and temp loss. Which supply affected?

a. PICA
b. Vertebrobasilar artery
c. Anterior spinal

Ans: **A**

22. Patient having loss of vision with macular sparing. (few recalled it as contralateral hemianopia with macular sparing), Cause?

a. Left sided occipital stroke
b. Anterior temporal stroke
c. Parietal stroke

Ans: **A**

23. Paramedian branches of the basilar artery are blocked, which syndrome do you suspect?

a. Weber syndrome
b. Lateral medullary syndrome
c. Locked in syndrome
d. Benedikt syndrome

Ans: **D**

24. A patient presented with Dizziness, weakness on one side of body, double vision, slurred speech. Best initial Investigation in 1st hour?

a. MRI brain
b. CT brain
c. CSF analysis

Ans: **B**

25. Stroke with intact higher cerebral dysfunction and no hemianopia is due to?

a. Total anterior circulation syndrome
b. Partial anterior circulation syndrome
c. Lacunar syndrome
d. Posterior circulation syndrome

Ans: **C**

26. Hypertensive patient presented in ER with BP 210/110 and with left sided hemiplegia, Diagnosis?

a. Lobar hemorrhage
b. Lobar infarct
c. Lacunar infarct
d. White matter disease

Ans: **C**

27. Patient had RTA and spoke fluently but with not much sense, Lesion in?

a. Frontal lobe lesion
b. Temporal lobe lesion
c. Parietal lobe

Ans: **B**

28. 45-year-old male presented in emergency department after head trauma, he cannot speak but understand, lesion in?

a. Frontal lobe lesion
b. Temporal lobe lesion
c. Parietal lobe
d. Arcuate fasciculus

Ans: **A**

Radiant Notes

Stroke Investigations

- The best initial test in any kind of stroke is a CT scan of the head without contrast.
- The most accurate test is an MRI.
- CT scan is done first, not because it is the most sensitive test for stroke, but in order to exclude hemorrhage as a cause of the stroke prior to initiating treatment

Lacunar infarcts

- Strong association with HTN
- Common sites include Basal Ganglia, thalamus and internal capsule
- present with either
  - Isolated hemiparesis,
  - Hemisensory loss or
  - Hemiparesis with limb ataxia

Aphasia

- Wernicke aphasia
  - Patient can speak, but can't understand spoken and written language
  - Area 22
  - Wernicke's area located in superior temporal gyrus
- Broca aphasia (: Broca's =Broken mouth)
  - Patient can't speak properly but can understand written and spoken language
  - Area 44 and 45
  - Broca's area located in inferior frontal gyrus

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29. Patient was started on diuretics by some physician, he presented with complaint of ataxia, nystagmus, vertigo, vomiting and lack of incoordination and became unconscious, diagnosis?
    a. MS
    b. BIH
    c. Subdural hematoma
    d. Brainstem hemorrhage

Ans: D

30. A 65-year-old male patient living in a nursing home presented with on and off confusion after a fall, which one of the following can be possible diagnosis?
    a. Epidural hematoma
    b. Subdural hematoma
    c. Subarachnoid hemorrhage

Ans: B

31. Which one of the following is true regarding Subdural haemorrhage?
    a. Middle meningeal artery rupture
    b. Aneurysm malformation
    c. Arterial in origin
    d. Venous in origin

Ans: D

32. 70-year-old male presented with headache for 1 month, history is suggestive of a fall 3 months back, possible reason?
    a. Chronic Subdural hematoma
    b. Subarachnoid hemorrhage
    c. Psychogenic headache
    d. Brain abscess

Ans: A

33. An old age male patient presented in ER with seizures, family members said he had a history of RTA few months back, diagnosis?
    a. Brain abscess
    b. Meniere disease
    c. Chronic Subdural hematoma

Ans: C

34. 30-year-old male patient after a car accident had head injury and brough to emergency, he went into lucid interval talk few words in between and deteriorating, what is diagnosis?
    a. Subdural
    b. Subarachnoid
    c. Epidural

Ans: C

Radiant Notes

Epidural hematoma	❖ **Rupture of middle meningeal artery (branch of maxillary artery), often 2° to skull fracture.** ❖ **Lens shaped (biconvex / lentiform) hematoma.** ❖ Involving the pterion (thinnest area of the lateral skull)—temporal lobe ❖ **Lucid interval** ---lucid interval is a second loss of consciousness occurring several minutes to several hours after the initial loss of consciousness-- ❖ **CN III palsy.**
Subdural hematoma	❖ **Rupture of bridging veins/great cerebral vein/diploic vein** ❖ **Crescent-shaped hematoma.** ❖ Most commonly secondary to trauma e.g. old person/alcohol falling over ❖ Most commonly occur around the frontal and parietal lobes ❖ Risk factors include old age, alcoholism and anticoagulation ❖ Features: ○ Headache ○ **Classically fluctuating conscious level** ○ Raised ICP
Subarachnoid hemorrhage	❖ Bleeding due **berry aneurysm (most common)**, AV malformation, trauma and tumor. ❖ Patients complain of "**worst headache of my life.**" + Neck stiffness on examination
Intraparenchymal hemorrhage	❖ Most commonly caused by systemic hypertension. ❖ May be 2° to reperfusion injury in ischemic stroke. . ❖ Typically occurs in basal ganglia and internal capsule

Neurology

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Neurology

35. Old age patient who is a known case of cirrhosis has history of fall & altered consciousness. CT show large sub Dural hematoma in frontoparietal area, most appropriate management?

a. FFPs
b. Vit K
c. Surgical evacuation

Ans: **C**

36. 3 months old baby diagnosed with pyogenic meningitis, he presented with high grade fever, vomiting, he was treated with parenteral antibiotics for 10 days but fever still persists, on examination raised fontanelle, after 10 days patient CSF came normal and condition improving, diagnosis?

a. Drug fever
b. Subdural empyema
c. Antibiotics resistance

Ans: **B**

37. A patient Was brought to ER with sudden onset of headache, became unconscious suddenly, on examination he is afebrile and neck stiffness is present. What do you think the diagnosis will be?

a. Meningitis
b. Encephalitis
c. Cerebral malaria
d. Subarachnoid haemorrhage

Ans: **D**

38. Which one of the following is a common cause of Subarachnoid hemorrhage (SAH)?

a. AV malformation
b. Berry aneurysm
c. HTN
d. Trauma

Ans: **B**

39. Patient with thunderclap headache, CT was ordered which showed subarachnoid hemorrhage, treatment?

a. IV mannitol
b. Nimodipine
c. Labetalol

Ans: **B**

40. A patient was presented to ER in state of severe headache and vomiting, on LP blood was present in CSF. The most probable diagnosis is?

a. Acute subdural
b. Chronic subdural
c. Extradural hematoma
d. Subarachnoid hemorrhage

Ans: **D**

41. Mountain bike rider came to emergency with funny feeling neck and left arm. Right sided ptosis and constricted pupil, some fine motor skills deficit left arm but not total weakness. Sensory inattention on entire left side, where is the lesion?

a. Basilar artery dissection
b. Cervical rib fracture
c. Carotid artery aneurysm
d. Rt MCA infarct
e. Rt. Lateral medullary syndrome

Ans: **C**

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42. Patient got up at morning with acute attack of vertigo associated with vomiting and ataxia with hypotonia what is most likely Diagnosis?

a. Cerebellar infarction
b. Meniere's disease
c. Post fossa tumour
d. Acoustic neuroma

Ans: **A**

43. A 38-year-old alcoholic male develops loose stools and some rashes on his skin. He also complains of problems in his memory. what is the treatment?

a. IV hydrocortisone
b. 25% dextrose IV
c. Thiamine
d. Vit B6

Ans: **C**

44. Middle age patient presented with coarse Intentional tremors, ataxia and Dysmetria, diagnosis?

a. Cerebrum lesion
b. Cerebellar lesion

Ans: **B**

45. A young boy presents in OPD with dancing movement of arms. On examination you find nodules around both elbows as well as skin rash. This dancing movement is known as:

a. Tic douloureux
b. Hemiballismus
c. Athetosis
d. Chorea

Ans: **D**

46. An old age male patient chronic smoker presented to you with nystagmus, ataxia and Dysdiadokinesia, Blood pressure 180/110, he also has history of transient loss of vision and consciousness, on further examination you notice a wheeze on chest auscultation, diagnosis?

a. **Paraneoplastic syndrome**
b. PICA
c. Cerebellar hemorrhage
d. Cerebral tumor

Ans: **C**

Radiant Notes

Clinical Features	Site of Lesion
Mnemonic: DASHING" ❖ Dysdiadochokinesia (impaired ability to perform rapid, alternating movement) and ❖ Dysmetria ((inability to perform point-to-point movements or abnormal finger nose test in simple words—or simpler past pointing) ❖ Ataxia ❖ Slurred speech ❖ Hypotonia ❖ Intention tremor ❖ Nystagmus ❖ Gait abnormality	❖ Cerebellar dysfunction
❖ Chorea (Sudden, jerky, purposeless movements)	❖ Basal ganglia (Caudate)
❖ Athetosis (Slow, snake-like, writhing movements)	❖ Basal ganglia
❖ **Wernicke-Korsakoff syndrome** Mnemonic: Wernicke problems come in a CAN O' beer ○ "Confusion, ○ Ataxia, ○ Nystagmus, ○ Ophthalmoplegia" Note: In alcoholic or malnourished patients, give thiamine before dextrose to Dec risk of precipitating Wernicke encephalopathy	❖ Mammillary bodies (bilateral) & medial thalamus

Neurology

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Neurology

47. An old age female presented with weakness in lower leg, fasiculation, atrophied muscles and decrease reflexes, diagnosis?

a. UMN disease
b. LMN disease
c. Peripheral neuropathy

Ans: B

48. An old patient with weakness of muscles of upper body and urinary dribbling history, on examination you found hyper-reflexia of knee and ankle joints, what is the diagnosis?

a. UMN disease
b. LMN disease
c. Tabes dorsalis

Ans: A

49. Patient presents with spastic paraparesis and mood liability. What is the diagnosis?

a. ALS
b. Vit B12 deficiency
c. Pseudobulbar palsy
d. Friedrich's ataxia

Ans: C

50. Patient has spastic tongue with upper motor neuron lesions. What is the diagnosis?

a. Bulbar palsy
b. Pseudobulbar palsy

Ans: B

51. A patient has spastic tongue with paraplegia. Which is the investigation of choice?

a. MRI brain
b. MRI spine
c. CSF analysis
d. NCV

Ans: A

52. A 39-year-old male taxi driver presented with difficulty in speaking and eating, on examination he is unable to protrude his tongue and exaggerated gag reflex, what is your diagnosis?

a. GBS
b. Myasthenia gravis
c. Pseudobulbar palsy
d. Parkinsonism

Ans: C

53. A 15-year-old male patient presents with difficulty in walking. On examination there is spastic paraparesis and increased gag reflex. Which is the most important investigation?

a. ASO titre
b. MRI brain
c. Blood cultures
d. MRI spine

Ans: B

Radiant Notes

UMN disease vs LMN disease

	UMN lesion	LMN lesion
Weakness	+	+
Atrophy	–	+
Tone	↑	↓
Reflexes	↑	↓
Fasciculations	–	+
Babinski	+	–
Spastic paresis	+	–
Flaccid paralysis	–	+
Clasp knife spasticity	+	–
Sites	▪ Cerebral cortex ▪ Internal capsule ▪ Brain stem ▪ Descending tracts upto anterior horn cells of spinal cord	▪ From anterior horn cells to motor end plate (cranial or peripheral nerves)

	Pseudobulbar Palsy	Bulbar Palsy
Definition	B/L UMN lesion of cranial nerve 9,10 and 12th	B/L LMN lesion of cranial nerve 9,10 and 12th
Speech	Spastic dysarthria (hot potato speech)	Dysarthria (nasal speech)
Gag reflex	↑	↓
Jaw jerk	↑	↓
Tongue	Spastic	Wasted, fasciculation
Others	UMN signs in limbs Emotional liability	No emotional liability
Causes	B/L cerebrovascular disease, MS	GBS, MG

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54. 26 years old female presented with sudden loss of vision, motor weakness and urinary incontinence along with extensor plantar response, diagnosis?
   a. Ependymomas
   b. Encephalomyelitis
   c. Multiple Sclerosis

Ans: C

55. A 25-year-old female with tremors and painful movements in eye and reduced vision, diagnosis?
   a. Huntington's disease
   b. Multiple sclerosis
   c. Syringomyelia

Ans: B

56. Which one of the following is the most common feature of Multiple sclerosis?
   a. Cerebral signs
   b. Optic neuritis
   c. Progressive non remitting course

Ans: C

57. A 28-year-old patient presented with case of visual disturbance and spastic paraparesis, Diagnosis?
   a. Parasagittal meningioma
   b. Multiple sclerosis
   c. Huntington disease

Ans: B

58. Most common sub-type of multiple sclerosis among the following?
   a. Relapsing-remitting disease
   b. Secondary progressive disease
   c. Primary progressive disease

Ans: A

59. Young girl presented with sudden loss of vision and spastic weakness in legs with tremors while working, diagnosis?
   a. Amyloidosis
   b. Multiple sclerosis
   c. Hereditary spastic paraplegia

Ans: B

60. Lesion of MS will be visualized in?
   a. Septal nuclei
   b. Grey matter
   c. White matter

Ans: C

61. Which finding in Multiple sclerosis will make the diagnosis unlikely?
   a. Intentional tremors
   b. Optic neuritis
   c. Intranuclear ophthalmoplegia
   d. Chorea

Ans: D

Radiant Notes

Multiple Sclerosis

- Autoimmune inflammation and demyelination of CNS (brain and spinal cord).
- Most often affects women in their 20s and 30s
- Clinical Features
  - Symptoms may exacerbate with increased body temperature (eg, hot bath, exercise).
  - Relapsing and remitting is most common clinical course.
  - Charcot triad of MS is a SIN:
    - Scanning speech
    - Intention tremor (also Incontinence and Internuclear ophthalmoplegia "INO")
    - Nystagmus
  - Visual:
    - Optic neuritis **(sudden loss of vision resulting in Marcus Gunn pupils)**
    - Optic atrophy
    - **INO**
  - Sensory:
    - Pins/needles and numbness, Sensory symptoms lasting for weeks are common in MS
    - Trigeminal neuralgia
    - Lhermitte's syndrome: Neck flexion may precipitate sensation of electric shock running down spine
  - Motor:
    - Spastic weakness: most commonly seen in the legs,
    - Intentional tremors
    - Urinary incontinence
- Investigations
  - **MRI---Gold standard—best initial and most accurate test**---ref MTB step 2 CK page 389)
    - High signal T2 lesions, **periventricular plaques**
    - Cranial MRI is more sensitive than spinal MRI
  - CSF:
    - **Oligoclonal bands** (and not in serum)
    - Increased intrathecal synthesis of IgG
  - Visual evoked potentials: VEP
- Treatment:
  - There is no cure.
  - Treatment is focused at reducing the frequency and duration of relapses.
  - Acute relapse: High dose **IV steroids (methylprednisolone for 3-5 days)**
  - Disease modifying therapies (β-**interferon**, glatiramer, natalizumab)

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62. 35-year-old female with history of vision problem one year back presents with difficulty in walking. On examination there is increased tone in both lower limbs with exaggerated reflexes. What is the diagnosis?

a. Subacute combined degeneration of cord
b. Transverse
c. Multiple sclerosis
d. GBS

Ans: **C**

63. Which clinical sign differentiates subacute combined degeneration of spinal cord from multiple sclerosis?

a. Absent ankle jerks
b. Brisk knee jerks
c. Sensory level

Ans: **A**

64. Interferons can be used for which neurological condition:

a. Relapsing remitting MS
b. GBS
c. Neuroleptic malignant syndrome
d. Benign intracranial hypertension

Ans: **A**

65. Regarding amyotrophic lateral sclerosis, what is true?

a. Wasting of large muscles of hands
b. Cerebellar involvement
c. Sensory involvement
d. Respiratory muscle involvement

Ans: **D**

66. 15-year-old boy develops weakness of lower limbs following by weakness in upper limbs. NCVs show acute axonal motor neuropathy. What is the best treatment for him?

a. observe
b. Thymectomy
c. IV methylprednisolone
d. IV immunoglobulins
e. Interferon beta

Ans: **D**

67. Which of the following is true regarding GBS?

a. Gradual onset
b. Sudden onset
c. Asymmetrical
d. Descending pattern

Ans: **B**

68. A patient with history of RTI one week back then developed lower limb weakness, decreased reflexes. Diagnosis?

a. GBS
b. Myasthenia gravis
c. Huntington disease

Ans: **A**

69. A Girl admitted in your ward having ascending weakness, power decreased, severe respiratory compromise. How to monitor her respiratory function?

a. FEV1
b. Negative inspiratory pressure
c. Vital capacity
d. Residual volume

Ans: **C**

70. An inflammatory Condition that involve Degeneration of Myelin Sheath Of peripheral nerves?

a. Multiple Sclerosis
b. Guillain-Barré syndrome
c. Myasthenia gravis
d. Huntington's disease

Ans: **B**

Radiant Notes

Guillain–Barré Syndrome

- Inflammatory demyelinating polyneuropathy that primarily affects motor nerves.
- Usually preceded by a viral or mycoplasma infection of upper respiratory or GI tract. Common infections include **Campylobacter jejuni**, CMV, hepatitis
- Clinical features:
  - Abrupt onset with rapidly ascending weakness/paralysis of all four extremities;
    - Usually symmetric,
    - **classically ascending** i.e., the lower extremities are affected first
    - If generalized—respiratory arrest
  - Extremities may be painful, but sensory loss is not typical.
  - Sphincter control and mentation are typically spared.
  - Autonomic features (e.g., arrhythmias, tachycardia, postural hypotension) are dangerous complications.
- Investigations:
  - CSF analysis—**elevated protein, but normal cell count**.
  - Electrodiagnostic studies—**decreased motor nerve conduction velocity.**
- Treatment:
  - Plasma exchange
  - IV immunoglobulins (IVIG): as effective as plasma exchange.
  - No benefit in combining both treatments.
  - IVIG may be easier to administer and tends to have fewer side-effects
  - Steroids and immunosuppressants have not been shown to be beneficial

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71. 30-year-old female patient comes to you with intermittent diplopia and fatigue in evening. What is the best treatment for best treatment for her?
   a. Anticholinesterase inhibitors
   b. Anticholinesterase inhibitors + thymectomy
   c. Anticholinesterase inhibitors + steroids
   d. Plasmapheresis

Ans: B

72. A 26 years old woman with a past history of hypothyroidism is suffering from ptosis and diplopia more marked in evening, previous history of such episodes are present and she explains that its not her first time, diagnosis?
   a. Chronic fatigue syndrome
   b. Polymyalgia rheumatic
   c. Multiple sclerosis
   d. Myasthenia gravis

Ans: D

73. Scenario of myasthenia gravis Anti-ach antibodies were negative, next step
   a. Anti –MUSK antibodies.
   b. ANA antibodies

Ans: A

74. Treatment which will effectively control symptoms of myasthenia gravis in a young patient
   a. Anti-acetylcholine esterase inhibitors
   b. IV methylprednisolone
   c. Methotrexate
   d. Atropine

Ans: A

75. Smoker with COPD complains of difficulty in chewing more marked in evening. On examination he has weakness of upper limbs and ocular muscles. Diagnosis?
   a. Lambert Eaton syndrome
   b. Myasthenia gravis
   c. Polymyalgia rheumatica

Ans: B

76. A girl while watching TV developed ptosis and diplopia which test will confirm the diagnosis?
   a. MRI
   b. CT brain
   c. EMG
   d. NCS

Ans. C

77. A 30 years old smoker has difficulty in chewing, his condition improves after few minutes with walking and repeated stimulation, what is the cause?
   a. Myasthenia gravis
   b. Lambert Eaton syndrome
   c. Parkinson
   d. Polymyalgia rheumatica

Ans: B

Radiant Notes

Neurology

Myasthenia Gravis

- Autoimmune disorder—Autoantibodies are directed against the nicotinic **acetylcholine receptors**
- Features:
  - The key feature is **muscle fatigability**
  - Muscles become progressively weaker during periods of activity and slowly improve after periods of rest:
  - Diplopia, Ptosis, Dysphagia
  - Proximal muscle weakness: face, neck, limb girdle
  - **Never sensory symptoms or signs**

- **TIP -----Look for a question describing "double vision and difficulty chewing," "dysphonia," or "weakness of limb muscles worse at the end of the day."**
- **This is because the extraocular muscles and mastication (masseter) are often the only 2 muscular activities universally done by people (i.e., watching TV and eating).**

- Investigations: (Ref MTB step 2 CK)
  - Best initial test: acetylcholine receptor antibodies (80%–90% sensitive) ---For patients without those antibodies, get anti-MUSK antibodies (muscle-specific kinase).
  - Edrophonium: short-acting inhibitor of acetylcholinesterase.
  - **Most accurate test: Electromyography** shows decreased strength with repetitive stimulation.
  - CT/ MRI to exclude thymoma **(CT with contrast is best than MRI)**
- Management:
  - Best initial treatment: Neostigmine or pyridostigmine (anticholinesterase)
  - If these medications do not control the disease, then next step
    - Age less than 60 years---Thymectomy
    - Age more than 60 years--Prednisone
    - Azathioprine, tacrolimus or cyclophosphamide, are used in order to get the patient off of steroids before serious adverse effects occur
  - Management of myasthenic crisis:
    - Plasmapheresis
    - Intravenous immunoglobulins

	Myasthenia Gravis	Lambert-Eaton Syndrome
Pathophysiology	Autoantibodies to postsynaptic nicotinic ACh receptor	Autoantibodies to presynaptic Ca2+ channel → ↓ACh release
Clinical	Ptosis, diplopia, weakness **Worsens with muscle use and recovery on rest.**	Proximal muscle weakness, **Improves with muscle use**
Associated With	**Thymoma, Thymic hyperplasia**	**Small cell lung cancer**

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78. Fatiguability diplopia occasionally proximal weakness all four limbs. labs given electrolyte normal. calcium 2.1 n phosphate 0.8 mmol, diagnosis?

a. Osteomalacia
b. Myasthenia gravis
c. Hypothyroidism

Ans: **B**

79. Patient with festinating gait and slowness of movements

a. Alzheimer disease
b. Neuroleptic malignant syndrome
c. Parkinson disease
d. Creutzfeldt-Jakob disease

Ans: **C**

80. Which one of the following is not a characteristic feature of Parkinson's Disease?

a. Bradykinesia
b. Rigidity
c. Bilateral Resting hand tremors
d. Expressionless face
e. Festinating gait

Ans: C

81. Psychiatric abnormality most prevalent in Parkinsonism

a. Depression
b. Dementia
c. Psychosis

Ans: **A**

82. Adverse effect seen with cabergoline?

a. Supranuclear palsy
b. Optic neuritis
c. Pulmonary fibrosis
d. Renal failure

Ans: **C**

83. Which one the following is a feature of idiopathic Parkinson disease

a. Spastic legs
b. Unilateral tremors
c. Ptosis
d. Anhidrosis
e. Cerebellar dysfunction

Ans: **B**

84. Most characteristic feature of Parkinson disease?

a. **Akinesia**
b. **Tremors when sleeping**
c. **Spastic legs**
d. **Rigidity**

Ans: D (Rigidity is the most characteristic feature—Ref: "Motor symptoms in Parkinson's disease," Handbook of Clinical Neurology, vol. 83, pp. 329–342, 2007)

85. Young male presented in emergency with resting tremors, rigidity, and bradykinesia. There is history of loss of consciousness in bathroom in winter season. Diagnosis?

a. Parkinson disease
b. Multiple system atrophy
c. Parkinsonism secondary to CO poisoning

Ans: **C**

Radiant Notes

Parkinson Disease

- ↓ Dopmaine
- This disease appears clinically most often after 50 years of age
- Loss of dopaminergic neurons (i.e. depigmentation) of substantia nigra
- Damaged cells contain highly characteristic eosinophilic intracytoplasmic inclusions (Lewy bodies).
- Clinical features: (Mnemonic: Parkinson TRAPS your body)
  - Tremor (pill-rolling tremor at rest-unilateral)
  - Rigidity (cogwheel)
  - Akinesia (or bradykinesia)
  - Postural instability
  - Shuffling gait/ The gait appears rushed (**festinating**) and may get stuck (freeze)
- Causes:
  - Idiopathic (most common)
  - Trauma, especially repeated trauma, as may occur in boxers.
  - Drugs and toxins, especially dopamine antagonists such as **MPTP (methyl-phenyltetrahydropyridine)**→ a contaminant in illegal street drugs.
- Management:
  - Dopamine receptor agonists (Bromocriptine, cabergoline)
    - *Side effects: pulmonary, retroperitoneal and cardiac fibrosis*
  - Levodopa
    - Usually combined with a decarboxylase inhibitor (e.g. carbidopa or benserazide) to prevent peripheral metabolism of L-dopa to dopamine
    - Reduced effectiveness with time (usually by 2 years)
  - Monoamine Oxidase-B (MAO-B) inhibitors e.g. Selegiline

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86. Which of the following features suggest Lewy body dementia?

a. Visual hallucinations
b. Auditory hallucinations
c. Altered state of consciousness
d. Vertical gaze palsy

Ans: **A**

87. Parkinson patient was stable on treatment, he fell and had a fracture for which he was started on metoclopramide + tramadol, afterwards he developed dystonia, and had labile BP, treatment?

a. Replace metoclopramide with domperidone
b. Increase dose of levodopa
c. Add anticholinesterases
d. Treat as multiple system atrophy

Ans: **A**

- ✓ I wouldn't mark this as multiple system atrophy---as he was stable before as mentioned- he developed symptoms after starting metoclopramide
- ✓ Dystonia is most common with metoclopramide
- ✓ So, replace it with domperidone which doesn't cross the blood brain barrier

88. Patient with forgetfulness and confusion and has problem going down stairs, on examination he has tremors. Diagnosis?

a. Alzheimer disease
b. Progressive supranuclear palsy
c. Shy-dragger syndrome

Ans: **B**

89. Early finding in Alzheimer's disease

a. Hallucinations
b. Tremors
c. Ataxia
d. Impairment of short-term memory.

Ans: **D**

90. Which one of the following is the most common risk factor for Alzheimer's disease?

a. 1st-degree relative with AD
b. Down's syndrome
c. ApoE4 allele
d. Zinc deficiency
e. Smoking

Ans: **A** (Ref: Kumar and Clark page 1139—While if asked most common gene than E4 allele)

91. Most common cause of dementia in elderly?

a. Lewy body dementia
b. Parkinson disease
c. Alzheimer disease
d. Neurosyphilis

Ans: **C**

Radiant Notes

Neurology

Shy-Drager syndrome (multi-system atrophy)

- Parkinsonism with autonomic dysfunction and **orthostatic hypotension**

Progressive supranuclear palsy (aka Steele-Richardson-Olszewski syndrome)

- a 'Parkinson Plus' syndrome
- **Parkinsonism+ impairment of vertical gaze**
  - Down gaze worse than up gaze

Lewy body dementia

- Dementia and visual hallucinations ("haLewycinations") →parkinsonian features
- Intracellular Lewy bodies primarily in cortex
- Diagnosis:
  - Single-photon emission computed tomography (SPECT) is aka as DaTscan.
- Management: **Rivastigmine**

Alzheimer Disease

- ↓ ACh
- Most common cause of dementia in elderly.
- Down syndrome patients have ↑risk of developing Alzheimer disease
- **Widespread cortical atrophy**→ Narrowing of gyri and widening of sulci.
- Morphologic abnormalities
  - Senile plaques
  - Amyloid Angiopathy→ **β-amyloid deposition** in and about vessels
  - **Neurofibrillary tangles**
  - Intracellular, **hyper-phosphorylated tau protein**
- Management:
  - **Acetylcholinesterase inhibitors (donepezil, galantamine and rivastigmine)**

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Neurology

92. A person presented with postural tremor postural, having slow progression and associated with titubation, after some rest it was relieved, the likely diagnosis is?

a. Intentional tremor
b. Pill-rolling tremor
c. Orthostatic tremor
d. Benign essential tremor

Ans: **D**

93. Elderly patient on antidepressant developed unilateral resting tremor...Cause of tremor?

a. Parkinson disease.
b. Cerebellar disease
c. Thyrotoxicosis

Ans: **A**

94. A patient comes to you in neurology clinic. he was worried about his tremors in hands as he feels extreme embarrassment in public. He tells you that his father had the same disease, what is most likely Diagnosis?

a. Intentional tremors
b. Parkinson tremors
c. Benign essential tremors
d. Cerebellar tremors

Ans: **C**

95. A 55-year-old man presented in Neurology OPD for follow up. On examination to check the tremors he is asked to outstretched the arms. On doing so he started tremors after 12 seconds. He is known type 2 diabetic. Cause of tremors

a. Huntington disease
b. Wilson disease
c. Benign essential Tremors
d. Parkinson's disease
e. Cerebellar damage

Ans: **C**

96. Old aged lady with broad base gait, intentional tremor on right side and past pointing, Diagnosis?

a. Sensory ataxia
b. Vestibular disease
c. Cerebellar ataxia
d. Friedrich ataxia

Ans: **C**

97. 70-year-old female with weight loss, palpitation & tremor, she is having Multinodular goitre, treatment?

a. **Beta blocker**
b. **Radioactive iodine**
c. **Antithyroid**
d. **Surgery**

Ans: **B**

Radiant Notes

Tremors

Parkinsonism tremor	❖ **Asymmetrical resting tremor, as a 'pill-rolling** ❖ Increased by stress or emotions
Essential tremor	❖ Postural tremor: worse if arms outstretched ❖ Improved by alcohol and rest ❖ Titubation ❖ **Often strong family history** ❖ **Rx: Propanolol**
Physiological tremor	❖ Postural tremor occurring in every normal individual. ❖ It is rarely visible to the eye and may be heightened by strong emotion (such as anxiety or fear), physical exhaustion, hypoglycaemia,
Cerebellar disease	❖ **Intention tremor** occurring at the end of a purposeful movement such as touching a finger to the tip of the person's nose.
Thyrotoxicosis	❖ Usual thyroid signs e.g. Weight loss, tachycardia, feeling hot...
Hepatic encephalopathy	❖ History of chronic liver disease

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98. A young female was using computer at late night. She developed blurred vision, black out and then she slept for next 12 hours. What is the diagnosis?

a. SAH
b. Benign intracranial hypertension
c. Epilepsy
d. Migraine

Ans: **C**

---

99. 13 years old child brought to OPD. They describe that child ceases his activity, stares and turns pale followed by eye twitching. Soon after he becomes normal. What is Diagnosis?

a. Petit-mal epilepsy
b. Partial seizure
c. Temporal lobe seizure
d. Myoclonic seizure
e. Jacksonian seizure

Ans: **A**

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100. A 20-year-old man after a driving accident recovered, after few months started to have loss of consciousness and arm and leg twitching. After the event he is disoriented for 2 hours and then gradually return to normal, what is the most likely diagnosis?

a. Syncope
b. Generalized seizure
c. Focal seizure
d. Cardiac arrhythmia

Ans: **B**

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101. Absence seizures provoked by?

a. Dehydration
b. Trauma
c. Chocolate
d. Hyperventilation
e. Hypoventilation

Ans: **D**

---

102. Patient presented in ER with loss of consciousness for some time and lip smacking, patient has felling fear and picking at things. EEG and CT brain normal, diagnosis?

a. Absence seizures
b. Temporal lobe epilepsy
c. Panic attack
d. Grand mal seizures

Ans: **B**

---

103. Man, with loss of consciousness along with tongue bite and urinary incontinence, regained consciousness, on examination there is no focal neurological deficit, Diagnosis?

a. TIA
b. Brainstem stroke
c. Epilepsy
d. stokes Adam syndrome

Ans: **C**

Radiant Notes

Neurology

Seizures/Epilepsy

Causes (VITAMIN-G)

- Vascular (e.g. stroke, arteriovenous malformations), Infection (e.g. meningitis, encephalitis, abscess), Trauma, Autoimmune, Metabolic (e.g. Hyponatremia, hypoglycemia, hypocalcemia, hypoxia), Idiopathic, Neoplasm, Genetic & development

Partial (focal) seizures

- **Simple Partial Seizures**
  - it begins as jerking on one side of the mouth or in one hand
  - No loss of consciousness
  - No Post-ictal confusion
  - **Jacksonian seizure:**
    - ✓ Also known as focal partial motor seizure
    - ✓ It begins as jerking on one side of mouth or in one hand, sometimes spreading to involve the entire side
  - **Todd's palsy:**
  - ✓ It refers to paralysis of involved limb after a seizure with complete recovery within 24 hours
- **Complex Partial Seizures**
  - it begins as repetitive blinking of eye, smacking of lips and cannot interact normally with people
  - Impairment of consciousness
  - Post ictal confusion present
  - **Temporal lobe epilepsy:**
  - ✓ Presents with the sensation of fear or déjà vu (undue familiarity) or Jamais vu (an unreal feeling) and can progress to hallucinations and altered conscious level

Generalized seizures

- **Generalized tonic-clonic seizure(grand mal):**
  - Alternating stiffening and movement with loss of consciousness
- **Absence (Petit mal)**
  - In this there is loss of consciousness but no loss of postural tone (e.g. The person seems to be day dreaming)
  - **Seizures may be provoked by hyperventilation or stress**
  - On EEG---3 per second spike and wave electrical activity
- **Myoclonic:**
  - Quick, repetitive jerks
- **Atonic:**
  - "Drop" seizures (falls to floor); commonly mistaken for fainting

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Neurology

104. Patient with first episode of focal fits and loss of consciousness, First Investigation of choice?

a. CT scan/MRI
b. EEG
c. Electrolytes
d. Blood glucose

Ans: B

- Many students with many recalls for this question and all of them different
- To keep it simple—just remember if a person had unconsciousness and recovered without any neuro focal deficit—you want to exclude fits---First choice and best choice is EEG---as the commonest error is to misdiagnose a syncopal blackout for a seizure---Ref: Kumar and Clark page 1114
- If he already had fits----Then CT/MRI---for this my reference is Ref: MTB step 2 CK page 375)

105. A middle-aged man presented with generalised tonic clonic seizures; most immediate management would be?

a. O2 inhalation
b. Turn the patient to lateral position
c. Maintain double IV line

Ans: **B**

106. An epileptic patient was controlled on taking Phenytoin for many weeks. she is again having fits now. what to do next?

a. Increase the dosage of phenytoin
b. Add another drug
c. Do the drug phenytoin level
d. Continue the same treatment

Ans: **C**

107. Regarding initiating anti-epileptic drugs, which of the following is correct?

a. At least two drugs should be started
b. Start with one drug at high dose
c. Start with one drug at lowest effective dose
d. Always start with IV route and then switch to oral

Ans: **C**

108. Best drug for myoclonic epilepsy?

a. Levetiracetam
b. Phenytoin
c. Ethosuximide
d. Carbamazepine

Ans: **A** (No option of sodium valproate)

109. Ethosuximide is the drug of choice in which type of seizures?

a. Partial
b. Absence
c. Myoclonic
d. Tonic clonic

Ans: **B**

Radiant Notes

Treatment

General Guidelines

- If the patient has a known seizure disorder (epileptic), check anticonvulsant levels first
- For all seizures, ABCs take priority: Secure airway and roll patient onto his side to prevent aspiration
- For confirm fits---Start with single drug and at low concentration
- If not controlled increase the dose of the 1st drug
- If still uncontrolled add a 2nd drug
- Stopping of Antiepileptic Drugs (AED) can be considered if seizure free for > 2 years
- But should be stopped over 2-3 months

Epilepsy type	Preferred 1st line Agent	Other 1st line agent
Partial seizures	Carbamazepine (Phenobarbital in neonates)	Lamotrigine Sodium valproate
Tonic clonic seizure	Sodium valproate	Lamotrigine, carbamazepine
Absence seizures	Ethosuximide	Sodium valproate
Myoclonic seizures	Sodium valproate	Clonazepam, levetiracetam
Status epilepticus	Benzodiazepines (e.g. Diazepam)	

Epilepsy in pregnancy

- All women thinking about becoming pregnant should be advised to take folic acid 5mg per day well before pregnancy to minimise the risk of neural tube defects
- Aim for monotherapy
- There is no indication to monitor antiepileptic drug levels
- Carbamazepine & lamotrigine: safe
- Lamotrigine: dose needs to be ↑ in pregnancy
- Sodium valproate: contraindicated. neural tube defects
- Phenytoin: cleft palate, clotting disorders (give vit k) --hirsutism
- Breast feeding: safe (except barbiturates)

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110. A young married female presents to you with history of seizures. She is taking Sodium valproate 500 TID. She is now 3 weeks pregnant. What will be your line of action?

a. Change valproate to non – teratogenic drugs like lamotrigine
b. Increase dose of valproate
c. Add lamotrigine to valproate
d. No changes in treatment

Ans: **D**

111. A Patient known epileptic, well controlled on sodium valproate is planning for pregnancy, came for advice about drugs?

a. Continue same medication
b. Increase the dose of drug
c. Decrease the dose of drug
d. Change the drug to lamotrigine

Ans: **D**

112. Female with history of RA and epilepsy presents with increased hair growth. Which drug is responsible?

a. Phenytoin
b. Methotrexate
c. Steroids
d. Valproate

Ans: **A**

113. Which one of the following is a complication of Valproic acid?

a. Cleft lip
b. Cleft palate
c. Neural tube defects
d. Coagulopathy

Ans: **C**

114. Safest antiepileptic in pregnancy among the following

a. Sodium valproate
b. Clonazepam
c. Levetiracetam
d. Lamotrigine

Ans: **D**

115. A patient presents with status epilepticus in emergency department. What should be your first immediate action?

a. IV diazepam
b. Airway maintenance
c. Left lateral position
d. IV phenytoin

Ans: **B**

116. Patient with status epilepticus drug to be given first?

a. Diazepam
b. Phenytoin
c. Phenobarbital
d. Sodium valproate

Ans: **A** (No Option of Lorazepam--- If present prefer Lorazepam > Diazepam)

117. A young patient with fits, still after IV anti-epileptic twice, 15-20 fits were witnessed in ER, GCS was 8/15. Eye movements, what to give now?

a. Phenytoin 5mg/kg
b. Phenytoin 10mg/kg
c. Phenytoin 20mg/kg
d. Diazepam 5mg over 4 mints

Ans: **C**

118. Phenytoin immediate side effect?

a. Arrythmia's
b. AV block
c. Bleeding

Ans: **A**

119. A patient was started on phenytoin developed a life threating skin disorder; the disease is called?

a. Erythema multiforme
b. Dermatitis herpetiformis
c. Toxic epidermal necrolysis (TEN)
d. Pyoderma gangrenosum

Ans: **C**

120. Which of the following anticonvulsant drugs has no drug interaction with warfarin?

a. Phenytoin
b. Carbamazepine
c. Lamotrigine
d. Sodium valproate

Ans: **C**

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Neurology

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Neurology

121. A patient presented with complaints of headache, fever, neck stiffness and seizures of one side of body. Investigation of choice would be?
   a. MRI brain
   b. EEG
   c. CSF analysis
   d. CT brain

Ans: D

122. 20-year-old male presents with sings of meningeal irritation. What is the next appropriate investigation?
   a. CT scan brain
   b. Lumbar puncture
   c. EEG
   d. Blood CS

Ans: B

- ✓ Best initial test and most accurate test is an LP for meningitis
- ✓ Head CT is always the first choice if there is seizure, papilledema or focal neurological deficit
- ✓ Ref: MTB page 100

123. Patient was diagnosed with meningitis. Lumbar puncture revealed gram positive diplococcic, causative organism?
   a. Streptococcus pneumonia
   b. Neisseria meningitis
   c. H. influenza

Ans: A

124. Picture of meningitis low grade fever with CSF Proteins 45mg/dl, CSF Glucose 80mg/dl, Serum Glucose 110mg/dl cell count normal. Diagnosis
   a. Bacterial meningitis
   b. Tuberculous meningitis
   c. Listeria meningitis
   d. Viral meningitis

Ans: D

125. A patient diagnosed as Meningitis; CSF analysis shows CSF lymphocytes 75% while neutrophils 25%, diagnosis?
   a. Bacterial meningitis
   b. Tuberculous meningitis
   c. Listeria meningitis
   d. Viral meningitis

Ans: B

126. Patient presented to ER with fever and meningitis sign positive, CSF fluid colour is cloudy, what findings do you expect on D/R?
   a. Inc lymphocyte count, Dec glucose, Inc protein
   b. Inc neutrophils count, Dec glucose, Inc protein
   c. Inc Neutrophil count, Inc glucose, Dec protein

Ans: B

Radiant Notes

Meningitis

- ❖ Clinical manifestations include fever, headache, prostration, and nuchal rigidity

CSF Findings in Meningitis

	Opening Pressure	Cell Type	Protein	Glucose
Normal values	10-20 cm H_2O	WCC 0-5 cells/µL	20-40 mg/dL	45-80 mg/dL (less than 2/3rd of blood glucose)
Bacterial	↑	↑ neutrophils	↑ (> 1g/L)	↓ (1/2 of plasma)
Fungal/ TB	↑	↑ Lymphocytes	↑ (> 1g/L)	↓ (1/2 of plasma)
Viral	↑/Normal	↑ Lymphocytes	↑/Normal	Normal or 80% of plasma glucose

BNF recommendations on antibiotics

- ❖ **Initial empirical therapy**
  - Aged 3 months- 50yr----Intravenous cefotaxime
  - Age < 3 months or > 50 years----Intravenous cefotaxime + amoxicillin
- ❖ **Haemophilus influenza or Pneumococcal meningitis-----** Intravenous cefotaxime
- ❖ **Meningococcal meningitis----** Intravenous benzylpenicillin or cefotaxime
- ❖ **Meningitis caused by Listeria----** Intravenous amoxicillin + gentamicin

- ❖ **Meningococcal meningitis Prophylaxis**
  - Household and close contacts of affected patients
  - Oral ciprofloxacin (DOC) or rifampicin or may be used.
  - Meningococcal vaccine should be offered to close contacts

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127. A student diagnosed meningococcal meningitis, what will you give for prophylaxis of roommate of patient?

a. Ceftriaxone
b. Amoxicillin
c. Rifampicin + Meningococcal vaccine
d. Erythromycin

Ans: **C**

---

128. A patient present with meningitis, Lumbar puncture done, CSF shows Protein 45mg/dL, 13 cells in CSF of a patient, diagnosis?

a. Viral meningitis
b. Bacterial meningitis
c. Tuberculous meningitis
d. Listeria meningitis

Ans: **A**

---

129. A patient of meningitis with ataxia, blood culture report shows an organism which is gram positive rod, likely treatment is?

a. Ceftriaxone + amoxicillin
b. Cefotaxime + amoxicillin
c. Amoxicillin + gentamycin

Ans: **C**

---

130. A 15 years old boy presented with high grade-of 103, On examination Kernig sign positive, pulse 90 bpm, diagnosis?

a. Meningitis
b. Malaria
c. Enteric fever
d. Dengue fever

Ans: **A**

---

131. Patient who had bilateral parotid swelling developed fits and unconsciousness what is Diagnosis?

a. Cerebral abscess
b. Meningoencephalitis
c. Meningitis

Ans: **B**

---

132. A patient with fever, fits, headache and unequal pupils. He had history of chronic sinusitis. Diagnosis?

a. Brain tumor
b. Brain abscess
c. Viral encephalitis
d. Bacterial. Meningitis

Ans: **B**

---

133. A young patient has history of fever. Kernig's sign is positive but neck stiffness is negative. Which test will you perform?

a. Lumber puncture
b. CT scan Brain
c. Thin and thick blood films
d. Chest x ray

Ans: **A**

---

134. A patient with meningococcaemia contacts positive. what is prophylactic treatment?

a. Clindamycin
b. Ampicillin
c. Co- trimoxazole
d. Ciprofloxacin

Ans: **D**

---

135. Young patient taking OCP's gets contact with meningococcal patient. What is prophylactic for her?

a. Doxycycline
b. Rifampicin
c. Ciprofloxacin
d. Co- trimoxazole

Ans: **C**

---

136. 55-year-old male presented with high grade fever, headache, vomiting and rash, on examination he had low BP, investigation shows Low Sugar, organism responsible?

a. Pneumococcus
b. Staph. Aureus
c. H. Influenza
d. Meningococcus

Ans: **D**

---

137. A patient came in contact with meningococcal meningitis patient, prophylactic treatment for him?

a. Tetravalent vaccine + rifampicin
b. Tetravalent vaccine + ceftriaxone
c. Meningococcal vaccine + rifampicin

Ans: **C**

---

138. A young female develops high grade fever. rash altered sensorium, on examination, there is neck stiffness and multiple bruises over his legs, which complication will you look for in this female?

a. DIC
b. Cerebral abscess
c. Adrenal insufficiency
d. Respiratory failure

Ans: **C**

---

139. A young female presented to you in ER with fever and rash on her body on examination, you examined that neck stiffness was present. What is your choice of investigation for this female?

a. Blood cultures
b. Meningococcal serology
c. CSF analysis
d. CT brain

Ans: **B**

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Neurology

140. A patient presents with generalized tonic clonic seizures is emergency. Her CT scan was done which shows 5cm multicentric mass lesion in right frontal lobe with vasogenic edema. What will be your diagnosis?

a. Glioblastoma
b. Schwannoma
c. Astrocytoma
d. Ependymoma

Ans: **A**

141. An MRI, brain of a young boy shows triangular classification in parietal lobe. What is your diagnosis?

a. Schwannoma
b. Calcified cyst
c. Glioblastoma multiforme
d. Healed brain abscess
e. Meningioma

Ans: **C**

142. A 35 years old male having vertigo, nystagmus and deafness presents to your clinic on CT brain, you found a hypodense area at CP angle. What is the cause?

a. Meningioma
b. Schwannoma
c. Glioma
d. Astrocytoma

Ans: **B**

143. Most common primary brain tumor.

a. Glioma
b. Meningioma
c. Schwannoma

Ans: **A**

144. An MRI brain of young boy shows triangular calcification in parietal Lobe. What is the diagnosis?

a. Calcified Cyst
b. Osteoma
c. Glioblastoma multiforme
d. Healed brain abscess
e. Oligodendroglioma

Ans: **E**

145. Patient presented with unilateral painless bulging of eye. His blood investigations and x-ray of orbit is normal. Likely cause is:

a. Glioma of optic nerve
b. Orbital vessel aneurysm
c. Thyroid hormones
d. Ophthalmoplegia

Ans: **A**

146. 65 years old patient presented with fits. CT brain showed well circumscribed calcified mass, diagnosis?

a. Meningioma.
b. Glioblastoma multiforme

Ans: **A**

147. Which of the following cancers mostly causes mets in brain?

a. Breast Ca
b. Lung Ca
c. Testicular Ca
d. Ovarian Ca

Ans: **B**

Radiant Notes

Adult Primary Brain Tumors

Most common are glioblastoma multiforme (Astrocytoma) > meningioma > acoustic neuroma

Glioblastoma multiforme (grade IV astrocytoma)

- Common, highly malignant 1° brain tumor with --1-year median survival. Found in cerebral hemispheres
- Can cross corpus callosum ("butterfly glioma").

Oligodendroglioma

- This neoplasm presents as a slow-growing tumor in the middle-age group and typically arises in the cerebral hemispheres
- Closely packed cells with large round nuclei surrounded by a clear halo of cytoplasm **("fried egg" appearance)**
- **Foci of calcification**

Meningioma

- Second most common primary intracranial neoplasm
- The neoplasm originates in arachnoidal cells of the meninges; the tumor is external to the brain and can often be successfully removed surgically.
- This neoplasm occurs most frequently in the cerebral hemispheres and the parasagittal region
- Histologic characteristics include a whorled pattern of concentrically arranged spindle cells and **laminated calcified Psammoma bodies.**

Schwannoma (neurilemmoma)

- This benign, slowly growing encapsulated tumor arises from Schwann cells.
- **When intracranial, it is most frequently localized to the 8th cranial nerve (acoustic neuroma, acoustic Schwannoma)**
- Acoustic neuroma is the third most common primary intracranial neoplasm
- It also originates frequently in posterior nerve roots and peripheral nerves.

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148. Patient with gradual onset of speech problem for two months weakness of right side
a. Tumour of left frontotemporal region
b. Seizures
c. Cerebral oedema

Ans: A

149. Which of the following part of brain is responsible for planning of motor movements?
a. Frontal lobe
b. Thalamus
c. Basal ganglia
d. Hippocampus

Ans: A

150. Which is the most common type of motor neuron disease?
a. Primary lateral sclerosis
b. Progressive muscular atrophy
c. Amyotrophic lateral sclerosis
d. Progressive bulbar palsy

Ans: C

151. Rarely seen in friedreich ataxia?
a. Diabetes Mellitus
b. Cardiomyopathy
c. Fits
d. Autosomal recessive

Ans: C

152. A patient who has absent ankle reflexes presented with glove and stocking type of sensory neuropathy. Now she has developed Charcot joint. Causes are?
a. Syringomyelia
b. Diabetic neuropathy
c. B12 deficiency

Ans: B

153. A patient presented with sudden attack of weakness and paralysis, labs shows potassium 2.4, diagnosis?
a. Duchene muscular dystrophy
b. Backers dystrophy
c. Myasthenia gravis
d. Familial periodic paralysis

Ans: D

154. A 40-year-old patient previously diagnosed as Tuberculous meningitis taking ATT, after 3 weeks he developed confusion and decreased cognition. what is the likely cause?
a. Drug effect
b. Brain abscess
c. Hydrocephalous
d. Cavernous sinus thrombosis
e. ATT resistance

Ans: C

155. Triad of dementia, Ataxia & urinary incontinence, diagnosis?
a. Inc intracerebral pressure
b. Normal pressure hydrocephalus
c. Inc intracranial pressure

Ans: B

Radiant Notes

Normal pressure Hydrocephalous

- **A reversible cause of dementia seen in elderly patients.**
- It is thought to be secondary to reduced CSF absorption at the arachnoid villi.
- These changes may be secondary to head injury, subarachnoid hemorrhage or meningitis
- **A classical triad of features is seen:**
  - Dementia and bradyphrenia
  - Gait abnormality (may be similar to Parkinson's disease)
  - Urinary incontinence
- Imaging:
  - Hydrocephalus with enlarged ventricles
- Management:
  - ventriculoperitoneal shunting
  - In equivocal cases therapeutic CSF drainage via lumbar puncture

Normal pressure hydrocephalus--> No Papilledema.

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157. 60-year-old female presents with dizziness when turning head from one side to other. What is the cause?

a. Acute labyrinthitis
b. Stokes Adam attack
c. Benign positional vertigo
d. Acoustic neuroma

Ans: C

158. 40-year-old female has vertigo on sitting as well as standing. What is the diagnosis?

a. Acute labyrinthitis
b. Meniere's disease
c. Vasovagal syncope
d. Benign paroxysmal positional vertigo

Ans: D

159. Diagnostic of GBS?

a. Raised CSF protein
b. Dec Glucose in CSF
c. Increased Cell count

Ans: A

160. Which of the following parts of brains is responsible for planning motor movements?

a. Frontal lobe
b. Thalamus
c. Basal ganglia
d. Hippocampus

Ans: A

161. 60-year-old patient presents with history of brief episode of hemiparesis and blindness. Which test will you perform?

a. Temporal artery biopsy
b. Carotid Doppler
c. CT scan brain
d. Slit lamp examination

Ans: C

162. A lady using medication for joint pain, now she feels difficulty to drag her legs investigation of choice?

a. MRI spine
b. X ray spine
c. Myelogram

Ans: A

163. A patient presented with triad of features showing Seizures mental retardation and adenoma sebaceum, diagnosis?

a. Neurofibromatosis
b. Sturge-Weber syndrome
c. Tuberous sclerosis

Ans: C

164. Patient comes with ptosis and dilated pupil. What is the diagnosis?

a. Third nerve palsy
b. Myasthenia gravis
c. Facial paralysis
d. Sixth nerve palsy

Ans: A

165. Which of the following is not a feature of raised ICP?

a. Tachycardia
b. Hypertension
c. Headache
d. Vomiting

Ans: A

166. A middle age female patient presents with lateral gaze palsy, headache and double vision. what is investigation of choice?

a. MRI brain
b. CSF
c. fundoscopy
d. CT brain

Ans: B

167. Obese female presented with headache, diplopia, papilledema and 6th nerve lesion, diagnosis?

a. Pseudotumor cerebri
b. Supranuclear palsy
c. Cavernous thrombosis.

Ans: A

Radiant Notes

Idiopathic intracranial hypertension

- Pseudotumour cerebri and formerly benign intracranial hypertension
- A condition classically seen in young, overweight females
- Features:
  - Headache, blurred vision
  - Papilledema (usually present)
  - **Sixth nerve palsy may be present**
- Diagnosis
  - CT scan is often normal;
  - LP---CSF increased opening pressure >20cm H20
  - **MRI and/or MRI venography is essential in these patients.**
- Management:
  - Weight loss, diuretics e.g. acetazolamide
  - Repeated lumbar puncture
  - Surgery:
    - ✓ A lumboperitoneal or ventriculoperitoneal shunt
    - ✓ Optic nerve sheath decompression and fenestration may be needed to prevent damage to the optic nerve.

Visual loss is the single threatening complication of idiopathic intracranial hypertension

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169. 30-year-old male with history of backache has been admitted with weakness of both legs. What investigation will you perform?
a. LP
b. MRI spine
c. NCV and EMG
d. CT scan brain
Ans: B

170. A 50 years old male presented to you in emergency with lower limbs paraplegia and urinary retention, what is most appropriate investigation?
a. NCS
b. MRI spine
c. CT scan
d. USG KUB
Ans: B

171. Patient presented with loss of 2-point discrimination, loss of contralateral pain and temperature and Horner's syndrome, diagnosis?
a. Vitamin B12 deficiency
b. Brown Sequard syndrome
c. Medial Ponting syndrome
d. Medial medullary syndrome
Ans: B

172. You see a patient with Tabes dorsalis. Which of the following can occur is this patient?
a. Optic atrophy
b. Cataracts
c. Dysphagia
d. Charcot joints
Ans: D

173. Most common cause of Charcot joints
a. Diabetes mellitus
b. Tabes dorsalis
c. Fredric ataxia
d. Syringomyelia
Ans: A

174. A syphilis patient is allergic to penicillin. What treatment will you give
a. Erythromycin
b. Doxycycline
c. Azithromycin
d. Ciprofloxacin
Ans: B

175. Syphilis diagnosed by?
a. TPHA (Treponema pallidum Haemagglutination test)
b. VDRL
c. Blood culture
Ans: A

Radiant Notes

Neurology

Spinal Cord Lesions

Brown-Séquard syndrome
- **Effect of Hemisection of spinal cord.**
  - Findings:
    - Ipsilateral loss of all sensation at level of lesion
    - Ipsilateral loss of proprioception, vibration, light (2-point discrimination) touch, and tactile sense below level of lesion (due to dorsal column damage).
    - Contralateral pain, temperature, and crude (non-discriminative) touch below level of lesion (due to spinothalamic tract damage)
  - If lesion occurs above T1, patient may present with ipsilateral Horner syndrome due to damage of oculosympathetic pathway

Transverse Myelitis
- Affects the tracts across the horizontal aspect of the spinal cord at a given level.
- The thoracic spine is the most commonly involved.
- Progression is usually rapid.
- Clinical features include lower extremity weakness or plegia, back pain, sensory deficits below the level of the lesion, and sphincter disturbance (especially urinary retention).
- **MRI** with contrast is the imaging study of choice.
- High-dose steroid therapy is often used

Tabes dorsalis
- **Caused by 3° syphilis.**
- Results from degeneration (demyelination) of dorsal columns tracts
- **All posterior (dorsal column) sensations are lost**
- Urinary bladder is atonic→ dribbling of urine
- Progressive sensory ataxia (impaired proprioception → poor coordination).
- Associated with **Charcot joints, shooting pain, Argyll Robertson pupils.**
- Exam will demonstrate **absence of Deep Tendon Reflexes s and ⊕ Romberg sign**

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Neurology

176. Patient complains of double vision. One week back he has history of eye trauma, o/e nasal boil, examination revealed lateral rectus palsy, and 3rd nerve palsy. Likely diagnosis would be
  a. Lateral sinus thrombosis
  b. Venous thrombosis
  c. Cavernous sinus thrombosis

Ans: C

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177. Patient presented with fever. Went to some local physician. Given some antipsychotics (Haloperidol recalled by few students). Developed full body rigidity. CSF Is Normal, Diagnosis?
  a. Pseudotumor cerebri
  b. Neuroleptic malignant syndrome
  c. Multiple sclerosis

Ans: B

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178. A patient after starting on haloperidol develop muscle rigidity, fever and encephalopathy, treatment?
  a. Carbamazepine
  b. Bromocriptine
  c. Chlorpromazine

Ans: B

---

179. A patient presented with ipsilateral paralysis of facial muscles and diagnosed as Bell's palsy, treatment?
  a. Prednisolone
  b. Acyclovir
  c. Tizanidine

Ans: A

---

180. 80% of patients with Bell's palsy will recover in a span of 12 weeks with
  a. Antibiotics
  b. Spontaneously
  c. Physiotherapy
  d. Mecobalamin
  e. With steroid treatment

Ans: B

---

181. An old man presented with dizziness and fear of fall. what could be the most treatable cause in this patient?
  a. Sedative
  b. Diuretics
  c. Vertebrobasilar insufficiency
  d. All of the above

Ans: B

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182. Patient while having arm movement, having blackouts, palpitations.
  a. Aortic stenosis
  b. Vertebrobasilar ischemia
  c. Dilated cardiomyopathy
  d. Anxiety

Ans: B

---

183. An old patient having BP 180/100 mmHg with headache and confusion his wife told that he was stumbling in the furniture. important bed side test to reach the diagnosis
  a. Romberg, s sign
  b. Mini-Mental State scoring
  c. Fundoscopy

Ans: C

---

184. Diabetic patient with weakness of proximal muscles of upper and lower limbs, planters upgoing, Babinski's positive. Diagnosis?
  a. Amyotrophy
  b. Peripheral neuropathy
  c. Myositis
  d. Dermatomyositis
  e. Proximal myopathy

Ans: A

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Chapter: 8 Rheumatology

1. **Patient of Ankylosing Spondylitis, investigation to confirm?**
   a. X-Ray sacroiliac joint
   b. CT lumbar
   c. Spirometry
   d. HLA-b27

Ans: A

2. **35-year-old male presented with backache and stiffness, CXR showed apical fibrosis, diagnosis?**
   a. Psoriatic arthritis
   b. Reactive arthritis
   c. Ankylosing spondylitis
   d. Pott's disease

Ans: C

3. **Which of the following is least likely to be associated with ankylosing spondylitis?**
   a. Apical fibrosis
   b. Achilles tendonitis
   c. Amyloidosis
   d. Achalasia
   e. Heart block

Ans: D

4. **Which of the following is the most common extra articular manifestation of Ankylosing spondylitis?**
   a. Anterior Uveitis
   b. Third Degree Heat Block
   c. Aortic Insufficiency
   d. Pulmonary fibrosis
   e. IBD

Ans: A

5. **A patient with ankylosing spondylitis develops severe pain. What treatment will you give?**
   a. Physiotherapy
   b. NSAIDS
   c. Steroids
   d. Methotrexate

Ans: B

6. **Young male presented with lower backache, usually worse in the morning and improves with exercise?**
   a. Ankylosing spondylitis
   b. Psoriatic arthritis
   c. Reactive arthritis
   d. Osteoarthritis

Ans: A

7. **Patient presented with back pain for last 2 years and there is bilateral upper lobe fibrosis what is most likely cause?**
   a. Tuberculosis
   b. Sarcoidosis
   c. Ankylosing spondylitis

Ans: C

Radiant Notes

Seronegative Spondyloarthritis (spondyloarthropathies)

- Common features
  - Associated with HLA-B27
  - Rheumatoid factor negative - hence 'seronegative'
  - Peripheral arthritis, usually asymmetrical
  - Enthesitis (inflamed insertion sites of tendons), e.g. Achilles tendonitis, plantar fasciitis
- Types: (mnemonic: PAIR)

Psoriatic Arthritis

- Associated with skin psoriasis and nail lesions.
- Asymmetric and patchy involvement
- Dactylitis and **"pencil-in-cup" deformity of DIP on x-ray**

Ankylosing Spondylitis

- This chronic condition affects the spine and sacroiliac joints and can lead to rigidity and fixation of the spine as a result of bone fusion (ankylosis)---leading to **Bamboo spine (vertebral fusion)**
- Typically a young man who presents with lower back pain and stiffness
- Can cause restrictive lung disease
- Features: Mnemonic the A's---A for Ankylosing spondylitis
  - Apical fibrosis (CXR)
  - Anterior uveitis
  - Aortic regurgitation
  - Achilles tendonitis
  - AV node block
  - Amyloidosis
- Plain x-ray of the sacroiliac joints is the most useful investigation in establishing the diagnosis.
- Treatment:
  - Exercise and physiotherapy
  - NSAID

Inflammatory Bowel Disease

Reactive Arthritis or Reiter Syndrome.

- Classic triad: (Mnemonic: **Can't see, can't pee, can't bend my knee.**")
  - Conjunctivitis (Can't see)
  - Urethritis (can't pee)
  - Arthritis (can't bend my knee)

Rheumatology

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Rheumatology

8. A young male presents to you with progressive stiffness and pain at back, what will you advise him?
   a. Get full investigation done as condition is curable
   b. Relax as this condition is fully benign and will not progress
   c. Exercise to increase and maintain movement and flexibility

Ans: C

9. Reactive arthritis is associated with which one of the following HLA antigens?
   a. HLA-A3
   b. HLA-DR4
   c. HLA-B27
   d. HLA-B5
   e. HLA-DR3

Ans: C

10. A young female patient with backache, morning stiffness. ESR 50. X-Ray lumbosacral normal, diagnosis?
   a. Rheumatoid arthritis
   b. Osteoarthritis
   c. Osteoporosis
   d. Ankylosing spondylitis

Ans: D

11. A 25-year-old woman presents with a three-day history of dysuria and a painful left knee. Her past history is significant for diarrhea, what is the most likely diagnosis?
   a. Reactive arthritis
   b. Rheumatoid arthritis
   c. Ulcerative colitis
   d. Gonococcal arthritis

Ans: A

12. A patient presented with psoriasis and his X-ray hand shows "pencil in cup deformity", diagnosis?
   a. Acromegaly
   b. Psoriatic arthritis
   c. Rheumatoid arthritis
   d. Osteoarthritis

Ans: B

13. A patient presented with pain in DIP joint along with nail pitting and skin rash, diagnosis?
   a. Psoriatic arthritis
   b. Reactive arthritis
   c. Rheumatoid arthritis
   d. Ulcerative colitis

Ans: A

14. Aortic insufficiency is associated with
   a. Ulcerative colitis
   b. Gonococcal arthritis
   c. Ankylosing spondylitis

Ans: C

15. Young male patient presented with high grade fever with rigors chills, pustules on extensor surface. Tender knee joint with synovial fluid exam reveal 55.000 leukocytes diagnosis?
   a. Streptococcal arthritis
   b. Gonococcal arthritis
   c. Tuberculosis arthritis
   d. Reiter syndrome

Ans: B

16. A young male patient presents with pain in knee joint examined the joint and found a pustule around the knee. what do you think he might have?
   a. Gonococcal arthritis
   b. Staph aureus arthritis
   c. Gout
   d. Reactive arthritis

Ans: A

17. Scenario of arthritis with haemorrhage rash on extensor surface of distal limbs?
   a. Staphylococcus
   b. Gonococcal
   c. Syphilis

Ans: B

18. Patient who is sexually active presented with joint pain, urethritis, and maculopapular rash, diagnosis?
   a. Gonococcal
   b. Staphylococcal
   c. Gout
   d. Reactive arthritis

Ans: A

Radiant Notes

Gonococcal Arthritis

- It is thought to be due to haematogenous spread from mucosal infection (e.g. asymptomatic genital infection).
- Initially:
  - There may be a classic triad: (Key features of disseminated gonococcal infection)
    - Tenosynovitis
    - Migratory polyarthritis
    - Dermatitis (lesions can be maculopapular or vesicular)
- Later complications include
  - Septic arthritis
  - Endocarditis and
  - Perihepatitis (Fitz-Hugh-Curtis syndrome)
- Treatment: IV broad spectrum cephalosporins (ceftriaxone 1g od) for 7 days.

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19. **Young boy with left ankle swelling, right knee pain, can't stand up on heels, hemorrhagic lesion on shin. Diagnosis?**
    a. Reactive arthritis
    b. Gonorrheal arthritis
    c. Septic arthritis

Ans: B

20. **Middle aged male presented with complain of sudden severe right knee swelling, on examination it is red hot & tender. Diagnosis?**
    a. Pseudogout
    b. Septic arthritis
    c. Osteoarthritis

Ans: B

21. **A patient with tender hip joint, diagnosed as septic arthritis, which one of the following is a common agent causing septic arthritis?**
    a. Salmonella
    b. Streptococcus
    c. Clostridium
    d. Staph aureus

Ans: D

22. **In a patient of sickle cell disease osteomyelitis is caused by**
    a. H. Influenza
    b. Salmonella
    c. Clostridium
    d. Staph aureus

Ans: B

23. **A 45 years old female with presents to the ER with a 2 days history of hot, painful, swollen right knee joint. What is the most appropriate management?**
    a. Course of Antibiotics
    b. Joint aspiration
    c. Intra articular steroid injection
    d. Methotrexate

Ans: B

24. **A patient having osteomyelitis of hip. Best investigation?**
    a. Joint aspiration
    b. MRI
    c. CT scan
    d. X-ray

Ans: B

25. **Brodie's abscess occurs in**
    a. Pyogenic osteomyelitis
    b. Pyogenic arthritis
    c. Tuberculous osteomyelitis
    d. Tuberculous arthritis

Ans: A

26. **Osteomyelitis of mandible is commonly caused by**
    a. Treponema
    b. Pseudomonas
    c. klebsiella
    d. Staphylococcus aureus

Ans: D

Radiant Notes

Septic arthritis & osteomyelitis

Osteomyelitis	Septic arthritis
❖ Osteomyelitis is an infection of the bone. It normally affects the long bones of the body; however, it can affect any bone	❖ Septic arthritis is an infection of any joint and is an orthopaedic emergency. It most commonly affects the hip or knee joint, however it can affect any joint in the body
❖ Subacute onset of limp / non-weight bearing / refusal to use limb ❖ Localized pain and pain on movement ❖ Tenderness ❖ Soft tissue redness / swelling may not be present & may appear late ❖ +/- Fever	❖ Acute onset of limp / non-weight bearing / refusal to use limb ❖ Pain on movement and at rest Limited range / loss of movement ❖ Soft tissue redness / swelling often present ❖ Fever
❖ **MRI is the imaging modality of choice**	❖ Urgent joint aspiration for synovial fluid microscopy and culture ❖ Blood cultures
❖ **Most common agent→ S. aureus** ❖ IV drug users → S. aureus ❖ Neonates→ H. influenza ❖ **Sickle cell disease → Salmonella**	❖ **S aureus (Most common)** ❖ Streptococcus ❖ Neisseria gonorrhoeae

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27. A 50-year man is awakened in the middle of the night with acute pain & tenderness of the right knee. He has a low-grade fever. His knee is hot, tender & swollen. Analysis of fluid from right knee shows: leukocytes 70,000/mm3 with 75% neutrophils, crystal analysis shows negative birefringent, gram stain: negative. The most likely diagnosis is?

a. Pseudo gout
b. Septic arthritis
c. Acute Gout
d. RA

Ans: **C**

28. A lady presented with swollen 1 metatarsophalangeal joint. The swelling is tender and red. She also complains of soft swelling at knee 2 weeks back. She also gives history of 2 similar episodes within 6 months. Which investigation is helpful to make the diagnosis?

a. RA factor
b. Anti-ds DNA antibodies
c. Uric acid level
d. ANA
e. X-ray

Ans: **C**

29. Patient developed pain the big toe while running; his serum uric acid was 6.7mg/dl, cause of pain?

a. Gout
b. Trauma.
c. Pseudogout

Ans: **A**

30. Calcium pyrophosphate crystals in joints, positive birefringent, diagnosis?

a. Gout
b. Pseudogout
c. SLE

Ans: **B**

31. Asymptomatic nephrolithiasis in gout patient, what to give?

a. Probenecid
b. Allopurinol
c. Indomethacin
d. Observe

Ans: **B**

32. A patient with Acute Gout, having severe pain, how to treat him?

a. Indomethacin
b. Allopurinol
c. Febuxostat
d. Probenecid

Ans: **A**

Radiant Notes

Gout Vs. Pseudogout

Gout	Pseudogout
❖ Crystal deposition disease, characterized by deposition of **monosodium urate crystals** into joints and other tissues	❖ Crystal deposition disease, characterized by deposition of **calcium pyrophosphate deposition crystals** within articular cartilages
❖ Most common site→ **1st metatarsophalangeal joint (podagra)**	❖ Most common site→ **ankle**
❖ Crystals→ **needle like, negative birefringent**	❖ Crystals→ **rhomboid shape, positive birefringent**
Treatment ❖ Acute attack→ NSAIDS, Colchicine, steroids ❖ Chronic attack→ **Allopurinol (should not be used in acute attack),** Febuxostat	Treatment ❖ NSAIDS, Colchicine, steroids

Gout Management:

❖ Acute management
- NSAIDs
- Intra-articular steroid injection
- Colchicine (Side effect –diarrhea)
- Oral steroids:
  - May be considered if NSAIDs and colchicine are contraindicated.
- Allopurinol
  - if the patient is already taking allopurinol it should be continued otherwise **it should not be started until 2 weeks** after an acute attack

❖ Indications for allopurinol
- Recurrent attacks:
- Tophi
- Renal disease
- Uric acid renal stones
- Prophylaxis if on cytotoxic or diuretics

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33. A patient synovial fluid analysis shows negative Birefringent, treatment to help further attacks?
a. Allopurinol
b. Indomethacin
c. Aspirin
d. Colchicine

Ans: **A**

34. Best investigation to diagnose GOUT is:
a. DEXA scan
b. Lateral x ray of foot
c. Bone scan
d. Serum uric acid level
e. Identification of urate crystals in synovial fluid

Ans: **E**

35. Which one of the following is correct regarding GOUT?
a. Resolve spontaneously
b. Equal increase in both genders below 30 years
c. Equal in both genders
d. Only involve synovium of joints
e. Microscopy shows rhomboid crystals

Ans: **A**

36. A patient who is known case of gout was prescribed ACE inhibitors and calcium channel blockers (CCBs) few months ago. Patient developed acute gouty arthritis soon after a binge of alcohol at a party. what do you think will do the cause of this attack?
a. ACE inhibitors
b. CCBs
c. Primaquine
d. Alcohol

Ans: **D**

37. A patient known case of gout, treated after having acute attack of gout, what prophylaxis should be given to prevent further attacks?
a. Colchicine
b. Allopurinol
c. Prevent hyperuricemia
d. Low dose aspirin

Ans: **B**

38. Which one of the following ATT is responsible for hyperuricemia?
a. Rifampicin
b. Ethambutol
c. Isoniazid
d. Pyrazinamide

Ans: **D**

39. A patient started on ATT, after one month developed bilateral knee joint pains. Investigation?
a. Uric acid
b. RA factor
c. Serum ca++ levels

Ans: **A**

Rheumatology

40. All of the following are common location of tophus except.
a. Ear
b. Achilles tendon
c. Fingers
d. breast

Ans: **D**

41. Patient with calcified lateral meniscus of knee and knee joint swallowing?
a. Gout
b. Pseudogout
c. Rheumatoid arthritis
d. Osteoarthritis

Ans: **B**

42. 20ml. brown colored fluid with good viscosity aspirated from knee joint. what can be its cause?
a. Gout
b. Rheumatoid arthritis
c. Osteoarthritis
d. Septic arthritis
e. Synovial hypertrophy

Ans: **E**

- ✓ Less viscous fluid may be seen with inflammation as there is good viscosity so it can't be septic arthritis
- ✓ Tan-colored or reddish-brown color may be seen in hyperproliferation of synovial tissue—Ref: "Articular abnormalities that may mimic arthritis by Adam Greenspan"

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Next few MCQ's are based on this theory

	Osteoarthritis	Rheumatoid arthritis
Pathogenesis	❖ Noninflammatory joint disease is characterized by degeneration of articular cartilage ❖ Osteoarthritis is most often related to mechanical trauma to the affected joints ("wear and- tear" arthritis)	❖ Chronic inflammatory disorder primarily affects the synovial joints ❖ Autoimmune disorder and Associated with HLA-DR4 (4 walls in a rheum (room)
Presentation	❖ Asymmetric joint involvement. ❖ **Morning stiffness of <15 minutes** ❖ **Improving with rest.** ❖ Pain in weight-bearing joints after use ❖ Knee cartilage loss begins medially ("bowlegged").	❖ Symmetric joint involvement ❖ **Morning stiffness of > 1 hour** ❖ **Improving with activity** ❖ Systemic symptoms (fever, fatigue, weight loss).
Joint Findings	❖ Heberden's nodes→ prominent osteophytes at DIP joints ❖ Bouchards nodes→ prominent osteophytes at PIP joints ❖ **Involves DIP and PIP, but not MCP**	❖ Swan-Neck deformity ❖ Boutonniere deformity ❖ Cervical joint involvement most commonly C1,C2 → **always perform X-ray cervical spine before ETT** ❖ **Involves MCP, PIP, wrist; not DIP** ❖ Ulnar deviation of fingers
Radiographic Hallmarks	Mnemonic: LOSS ❖ Loss of joint space-- **typically non-uniform** ❖ Osteophytes ❖ Subarticular sclerosis ❖ Subchondral cysts	❖ Loss of joint space-- **typically uniform** ❖ Soft tissue swelling ❖ **Erosions** ❖ Periarticular osteopenia
Lab Findings	❖ RA factor→ negative ❖ ESR, CRP → normal ❖ Anti-CCP→ negative	❖ RA factor→positive (70%- non-specific, IgM antibody that targets IgG Fc region) ❖ ESR, CRP → raised ❖ **Anti-CCP→ positive (90% --more specific)**
Treatment	❖ Acetaminophen, NSAIDs, intra-articular glucocorticoids.	❖ NSAIDs, glucocorticoids, ❖ **DMARD's** (methotrexate, sulfasalazine, hydroxychloroquine) ❖ **Biologic agents** (e.g., TNF-α inhibitors).
Poor prognostic features	❖	❖ Rheumatoid factor positive, Anti-CCP antibodies, HLA DR4, Poor functional status at presentation ❖ X-ray: early erosions (e.g. after < 2 years) ❖ Extra articular features e.g. nodules ❖ Insidious onset & Female gender is associated with a poor prognosis.

Extra-Articular Complications with Rheumatoid Arthritis

- **Respiratory:**
  - Pulmonary fibrosis & nodules, pleural effusion
  - **Bronchiolitis obliterans**
  - Complications of drug therapy e.g. methotrexate pneumonitis, infection (possibly atypical) secondary to immunosuppression
- **Ocular:**
  - keratoconjunctivitis sicca (most common), episcleritis (erythema), scleritis (erythema and pain).
- **Osteoporosis**
- **Amyloidosis (AA)**
- **Felty's syndrome**
  - RA + splenomegaly + low white cell count+ leg ulcer in chronic seropositive RA
- **Caplan's syndrome**
  - RA + Pneumoconiosis + Lung Nodules

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43. Rheumatoid factor in rheumatoid arthritis is important because?

a. Absent RA factor rules out the diagnosis of rheumatoid arthritis
b. It is very common in childhood rheumatoid arthritis
c. RA factor is associated with bad prognosis

Ans: **C**

44. Patient of RA on DMARDS presented with jaundice and abnormal LFT's, which drug is responsible

a. Steroids
b. Sulfasalazine
c. Gold salts
d. Methotrexate
e. Leflunomide

Ans: **D**

45. A known case of Rheumatoid arthritis with progressive disease, complains of inability to climb from chair and comb his hair. On examination there is weakness and upgoing plantars, what investigation will you perform?

a. Serial CRP
b. Anti CCP antibodies
c. MRI spine
d. RA factor

Ans: **C**

46. A Rheumatoid Arthritis patient on steroid, develops sudden diffuse pain in abdomen with vomiting along with shoulder tip pain, test to perform?

a. USG
b. USG KUB.
c. endoscopy
d. CXR

Ans: **D** (Steroid induced peptic ulceration/perforation)

47. A diagnosed RA patient presents to you with periorbital edema, cause of edema in such a patient will be:

a. Drug allergy
b. Renal amyloidosis
c. Steroid use
d. Cardiac failure

Ans: **B**

48. A diagnosed case of Rheumatoid arthritis patient presents with anemia, thrombocytopenia, and Spleenomegaly diagnosis?

a. Bone marrow suppression
b. Felty's syndrome
c. Caplan syndrome
d. Amyloidosis

Ans: **B**

49. Which one of the following drugs *reduces* progression of disease in Rheumatoid arthritis?

a. Steroids
b. NASIDS
c. Methotrexate

Ans: **C**

50. Poor prognosis in Rheumatoid arthritis is associated with

a. Disease duration over 2 months
b. Lower baseline deformity
c. Involvement of large joints
d. Early onset and deformity in females
e. Male gender

Ans: **D**

51. A patient of rheumatoid arthritis presented with splenomegaly & leucopenia, diagnosis

a. Felty syndrome
b. Caplan syndrome
c. Amyloidosis
d. Multiple myeloma

Ans: **A**

52. A lady with a diagnosed case of rheumatoid arthritis, presents to you with low backache and pain in the neck, she also has proximal muscle weakness?

a. NCS
b. EMG
c. MRI cervical spine
d. X-ray lumbosacral spine

Ans: **C**

53. Rheumatoid arthritis patient, now unable to walk, comb hair or rise from chair, O/E plantars are upgoing, investigation?

a. NCS
b. EMG
c. MRI cervical spine

Ans: **C**

54. A 60-year-old male with rheumatoid arthritis and CCF get respiratory tract infection, he was started on antibiotics which made his K+ level rises. which drug is responsible?

a. Spironolactone +frusemide therapy
b. Diclofenac K
c. Ceftriaxone
d. Losartan K
e. Co- trimoxazole

Ans: **E**

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55. Which one of the following valvular abnormality is seen in Rheumatoid arthritis?

a. Mitral stenosis
b. Mitral regurgitation
c. Aortic regurgitation
d. Aortic stenosis

Ans: **C**

56. Osteoarthritis most commonly occur at:

a. Hip
b. Knee
c. Base of thumb
d. DIP joint of hand

Ans: **B**

57. Osteoarthritis joint not involved?

a. Hip
b. Knee
c. Ankle
d. Cervical

Ans: **D**

58. A Patient presented with knee joint pains. There is involvement of DIP involved and sparing of MCP joints, diagnosis?

a. Septic arthritis
b. Osteoarthritis
c. Rheumatoid arthritis
d. Osteomyelitis

Ans: **B**

59. A pregnant diabetic female having tingling in 3rd 4th 5th finger. Diagnosis?

a. Vitamin D deficiency
b. Carpal tunnel syndrome

Ans: **B**

60. A patient of rheumatoid arthritis presented with carpal tunnel syndrome, Cause?

a. Secondary amyloidosis
b. Sjogren syndrome
c. Felty syndrome

Ans: **A**

61. Which one of the following cytotoxic agents work by inhibiting dihydrofolate reductase and thymidylate synthetase?

a. Vincristine
b. Bleomycin
c. Methotrexate
d. Cyclophosphamide

Ans: **C**

62. Use of methotrexate leads to which deficiency?

a. Vitamin C deficiency
b. Vitamin B6 deficiency
c. Vitamin B12 deficiency
d. Folic acid deficiency

Ans: **D**

63. A rheumatoid arthritis patient is undergoing major surgery, which test to perform before general anesthesia to avoid complications?

a. CSF analysis
b. ESR
c. CRP
d. X-ray cervical spine

Ans: **D**

64. A pregnant lady who is diagnosed case of rheumatoid arthritis, is on low dose steroid, which one of the following is correct?

a. Suppress HP axis
b. Does not suppress HP axis

Ans: **B**

65. Rheumatoid arthritis patient with SOB that was progressive and pleural fluid analysis showed decreased glucose, Diagnosis

a. Pancreatitis
b. Bronchiolitis obliterans.
c. Oesophageal perforation
d. Tuberculosis

Ans: B

66. Patient with rheumatoid arthritis, developed pleural effusion, diagnostic of the disease will be?

a. Pleural fluid for cell count
b. Pleural fluid for proteins
c. Pleural fluid for glucose
d. Pleural fluid for LDH

Ans: **C**

67. 40 years old male patient with arthritis, increase neutrophils and low glucose on pleural fluid R/E, Likely diagnosis?

a. Rheumatoid arthritis
b. SLE.
c. Mesothelioma
d. pulmonary embolism
e. tuberculosis

Ans: **A**

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68. A female patient presented with joint pain and malar rash, what is the Diagnosis?
   a. SLE
   b. RA.
   c. Scleroderma

Ans: A

69. 23-years-old female presented with Malar rash, cutaneous vasculitis & arthritis cause?
   a. T-helper cell deficiency
   b. severe combined immunodeficiency
   c. IgA deficiency
   d. Complement deficiency

Ans: D

70. Cause of Libman sack thrombotic endocarditis?
   a. Streptococcus pneumonia
   b. Staphylococcus aureus
   c. Streptococcus bovis
   d. Systemic lupus erythematosus

Ans: D

71. Girl with butterfly rash (SLE), Initial most sensitive test is
   a. ANA
   b. Anti-dsDNA
   c. CRP
   d. Anti-smith antibodies

Ans: A

72. A Girl presented with Butterfly Rash, joint pain and History of abortion. ANA +ive, which test should be done to confirm the diagnosis?
   a. Heterophile antibodies,
   b. Anti-mitochondrial antibodies
   c. Anti-dsDNA
   d. Anti-ssDNA

Ans: C

73. A 23-year-old woman has had worsening malaise along with a malar skin rash persisting for 3 weeks. On physical examination, she has an audible friction rub on auscultation of the chest, along with a faint systolic murmur. An echocardiogram reveals small vegetation on the mitral valve and adjacent ventricular endocardium. Laboratory studies show a positive serologic test for anti-Smith antibody and ANA. Which of the following is the most likely diagnosis?
   a. Polyarteritis nodosa
   b. Diffuse Scleroderma
   c. ANCA-associated granulomatous vasculitis
   d. Systemic lupus erythematosus

Ans: D

74. Which one of the following is associated with prognosis in SLE?
   a. Anti dsDNA antibodies
   b. ANA
   c. Anti-Smith antibodies
   d. Anti-smooth muscle antibodies

Ans: A

Rheumatology

Radiant Notes

Systemic Lupus Erythematosus (SLE)

- Most common connective tissue disorder, more common in women's
- It is multisystem inflammatory autoimmune disorder
- Classic scenario is like rash, joint pain, and fever, commonly in a female of reproductive age
- Most important lesions frequently asked in exam:
  - Libman-Sacks Endocarditis—(Mnemonic: (LSE in SLE)
    - Nonbacterial, thrombi usually on mitral or aortic valve
  - Lupus nephritis:
    - Glomerular deposition, can be nephritic or nephrotic
  - **SLE and Pregnancy:**
    - Neonatal complications include congenital heart block, it is strongly associated with **anti-Ro** (SSA) antibodies
- **Common causes of death in SLE: (in order of preference)**
  - Cardiovascular disease
  - Infections
  - Renal disease
- Findings:

Antinuclear antibodies (ANA)	**Sensitive**, not specific
Anti-dsDNA antibodies	**Highly specific**, poor prognosis (renal disease)
(Anti-Smith antibodies	**Most specific**, not prognostic
Antihistone antibodies	Sensitive for drug-induced lupus (e.g., hydralazine, procainamide)
↓C3, C4	Formation of complexes leads to consumption of complement
Others	ESR—Raised CRP–Normal

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75. Which one of the following is most significant in Active SLE?

a. Fever
b. Malar rash
c. Lymphadenopathy
d. Weight loss

Ans: A

76. Common causes of death in SLE:

a. Renal disease
b. Cardiovascular
c. Infections
d. Diarrhea

Ans: B

- ✓ As many would disagree—here are few references
- ✓ Ref: Medscape topic Systemic Lupus Erythematosus (SLE): Practice Essentials
- ✓ Ref: MTB page 254
- ✓ Ref: Davidson
- ✓ While in young patients its infection—

77. Neurological features included as one of the diagnostic criteria of SLE

a. Epilepsy
b. Aseptic meningitis
c. Transverse myelitis
d. Peripheral neuropathy
e. Cerebrovascular accidents

Ans: A

78. Most common antibodies found in SLE?

a. Anti-RNP
b. ANA
c. Anti-RO
d. Anti-Sm

Ans: B

79. A patient with malar rash, vasculitis and Raynaud's what will be present in investigation?

a. Esterase deficiency
b. Decrease complement levels
c. T- cells

Ans: B

80. A patient presented to you in OPD with joint pain, facial rash and photosensitivity her initial screening test will be?

a. ANA
b. Anti-Ds DNA
c. Anti-smith antibodies
d. Anti-Histone antibodies

Ans: A

81. True regarding SLE?

a. CRP level used to monitor disease activity
b. ESR remains normal'
c. Anti DsDNA used to monitor disease activity

Ans: C

82. A patient was started on hydralazine and developed drug induced SLE, best investigation?

a. Antihistone antibodies
b. CRP
c. Anti-smooth muscle antibodies
d. Anti-mitochondrial antibodies

Ans: A

83. Type of hypersensitivity reaction seen in SLE patient?

a. Type -1
b. Type 2
c. Type 3
d. Type 4

Ans: C

84. SLE patient developed carcinoma of bladder. Cause

a. Steroids
b. Cyclophosphamide
c. Hydroxychloroquine

Ans: B

85. A 30-year-old female with 9-month history of intermittent fever, myalgia and chest pain. symptoms increase during menses, ESR =90 Mantoux negative. what is your diagnosis?

a. Systemic vasculitis
b. Sarcoidosis
c. SLE
d. TB

Ans: C

86. A female started on treatment for acne, did not respond to treatment, now developed pustule lesion on cheeks and chin, ESR raised, reduced complement levels?

a. SLE
b. Erythema multiforme
c. Drug induced

Ans: A

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87. A 42-year lady presented to you with scaly erythematous plaques on face and trunk for 2 months. labs show Hb 10, TLC 3800, PLT 90000. she feels unwell and lethargic as the day progresses. What is your diagnosis?
    a. Steroid induced myopathy
    b. Pemphigus folacious
    c. SLE
    d. IgA pemphigus

Ans: C

88. A young girl of right leg DVT presents to you in OPD, she has normal PT and raised APTT which doesn't respond to FFP, what you think she will have:
    a. APLS
    b. Protein C deficiency
    c. TTP
    d. DIC

Ans: A

89. A 47-year-old female with SLE has prolonged APTT. she is more prone to develop:
    a. Bleeding from any site
    b. Recurrent attacks of both arterial and venous thrombosis
    c. Recurrent DVT
    d. Recurrent Fits

Ans: B

90. To diagnose APLs, screening is by:
    a. PT
    b. APTT
    c. FDPs
    d. Serum fibrinogen level

Ans: B

91. For diagnosis of antiphospholipid syndrome
    a. Anti-beta 2 glycoprotein
    b. Anticardiolipin antibody
    c. Lupus anticoagulant

Ans: B

92. Primary APLS has all features except?
    a. Arterial thrombosis
    b. Venom thrombosis
    c. Migraine
    d. Recurrent abortion
    e. Primary feature of SLE

Ans: E

93. Regarding treatment of SLE
    a. Immunoglobins are required
    b. Immunosuppressive drugs are required
    c. Corticosteroids
    d. Only NSAIDs are effective

Ans: C

Radiant Notes

Diagnostic criteria for SLE (manifestation)

Presence Of ≥ 4 Of Following 11 Criteria (mnemonic: DOPAMINe RASH)
Discoid rash
Oral ulcers
Photosensitivity
Arthritis (non-erosive)
Malar rash (**butterfly rash on cheeks and nose with sparing of nasolabial folds**)
Immunological → positive anti-dsDNA (very specific, prognostic), anti-Sm (very specific, non-prognostic), antiphospholipid antibodies
Neurological: seizures or psychosis
Renal: proteinuria, glomerulonephritis
ANA positive (Best screening test)
Serositis: Pericarditis, Pleuritis
Haematological: hemolytic anemia, lymphopenia, leukopenia, thrombocytopenia

Antiphospholipid antibody syndrome

- This prothrombotic disorder is characterized by autoantibodies directed against a number of protein antigens complexed to phospholipids.
- Primary autoimmune disorder
- Or 2ndry autoimmune disorder (**most commonly in SLE**).
- Diagnose based on clinical criteria including history of thrombosis (arterial or venous) or **spontaneous abortion** along with laboratory findings
- Lab findings:
    - Lupus anticoagulant (↑aPTT).
    - Anticardiolipin antibody
    - anti-β2 glycoprotein antibodies.
- Treatment:
    - Anticoagulation
        - Warfarin to maintain an INR of 2.0-3.0.
        - Guidelines indicate that patients with APS should be treated with anticoagulation for life.

Important points

- Anticardiolipin antibody, can cause a false positive serologic test for syphilis.
- Only lupus anticoagulant prolonged APTT that does not correct when mixed with normal plasma.

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Rheumatology

94. 2a-year-old male presented with malaise and myalgia and proximal muscle weakness. CPK is 3000. What will you advise next?
   a. LDH levels
   b. Muscle biopsy
   c. Autoimmune profile
   d. ESR

Ans: **B**

95. A patient presents to you with muscle weakness you suspect polymyositis, which investigation you will perform?
   a. Muscle biopsy
   b. CPK
   c. LDH
   d. EMG

Ans: **A**

96. An autoantibody screen reveals that a patient is positive tor anti-jo 1 antibodies. What is the most likely underlying diagnosis?
   a. Dermatomyositis
   b. Polymyositis
   c. Limited cutaneous systemic sclerosis
   d. Mixed connective tissue disease

Ans: **B**

97. A 39-year-old female complains of difficulty in climbing stairs. She has recently developed rash over dorsum of hands. What is the likely diagnosis?
   a. Polymyositis
   b. SLE
   c. RA
   d. Dermatomyositis

Ans: **D**

98. A 24-year-old female with visits your office for evaluation of a progressive weakness and skin rash. On physical examination the skin rash appears as red/ violaceous flat-topped papules with a light scale that appear over the metacarpophalangeal, proximal and distal interphalangeal joints. Which of the following is the most likely diagnosis in this patient?
   a. Psoriasis
   b. Rheumatoid arthritis
   c. Dermatomyositis
   d. Lichen sclerosis
   e. Systemic sclerosis

Ans: **C**

99. Increased risk of malignancy among the following?
   a. Polymyositis
   b. Dermatomyositis

Ans: **B**

Radiant Notes

Inflammatory Myopathies (Polymyositis/Dermatomyositis)

Overview

- Inflammatory disorder causing symmetrical, proximal muscle weakness and characteristic skin lesions
- May be idiopathic or associated with connective tissue disorders or underlying malignancy (found in 20-25% - more if old patient)
- More common in females
- **Polymyositis is a variant of the disease where skin manifestations are not prominent**

Clinical features

- Dermatomyositis and polymyositis's has the same clinical features except that **skin is not involved in polymyositis**
- Features –skin features only in dermatomyositis
  - Photosensitive
  - Macular rash (similar to SLE)
  - Heliotrope rash (erythematous periorbital rash)
  - Gottron's papules - roughened red papules over extensor surfaces of fingers especially on knuckles
  - **Shawl sign— (erythema of face, neck, shoulders and back)**
- Features similar to both dermatomyositis and polymyositis
  - Proximal muscle weakness +/- tenderness
  - Raynaud's
  - Respiratory muscle weakness
  - Interstitial lung disease: e.g. Fibrosing alveolitis or organizing pneumonia
  - Dysphagia, dysphonia

Investigations (similar in both conditions)

- ↑ CK
- ANA ⊕,
- **anti-Jo-1 ⊕**
- **anti-SRP (signal recognition peptide) ⊕**
- **anti-Mi-2 antibodies ⊕.**
- **Muscle biopsy –most accurate Investigation**
- Screen for malignancy by U/S abdomen + pelvis-(♀)/+PSA (♂) – CT chest might be needed

Treatment:

- Steroids followed by long-term immunosuppressant therapy (e.g., methotrexate).

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100. Gottron's papules is seen in which of the following conditions?
 a. Polymyositis
 b. SLE
 c. Dermatomyositis
 d. Psoriasis

Ans: C

101. A 30 years old female Patient developed proximal symmetrical muscle weakness. deltoid muscle biopsy shows necrosis with neutrophils. ANA was negative and Anti-Jo Antibodies were positive, Diagnosis?
 a. SLE
 b. RA
 c. Dermatomyositis
 d. Sjogren's syndrome

Ans: C

102. A 55-year-old lady presents with a 3-month history of progressive muscle weakness and facial rash. She describes difficulty climbing the stairs and even combing her hair. On examination, you note a purple rash on her upper eyelids, Basic laboratory investigations reveal a raised creatine kinase. What is the most likely diagnosis?
 a. Dermatomyositis
 b. Polymyositis
 c. X-linked muscular dystrophy
 d. Rheumatoid arthritis
 e. Hyperthyroidism

Ans: A

103. Patient presents with fatigue and generalized weakness, On examination Pain at different sites and points in shoulder?
 a. Dermatomyositis
 b. Polymyositis
 c. Fibromyalgia
 d. Polymyalgia Rheumatica

Ans: C

104. 70-year-old male with Proximal muscles weakness with fatigue and increased pain on movements, ESR 86, Anemia. Bone marrow biopsy showed increased Iron stores. Diagnosis?
 a. PMR
 b. Myelodysplasia
 c. Fibromyalgia

Ans: A

105. Proximal muscle weakness and purple rash around eyelids, Diagnosis?
 a. Dermatomyositis
 b. Polymyositis
 c. Rheumatoid arthritis

Ans: A

106. 60-year man with complaint of proximal muscle weakness and gradually progressive dysphagia his CK level raised. Most diagnostic investigation?
 a. Muscle enzyme
 b. Muscle biopsy
 c. EMG
 d. NCV

Ans: B

107. A young boy presents to you with the complaint of dark colored urine after exercise. he experiences same episodes whenever he came back from game, which test you will perform to reveal diagnosis?
 a. Muscle enzyme
 b. Urine D/R
 c. Ultrasound abdomen

Ans: A (Scenario of McArdle)

108. A 62-year-old male patient presented with complain of shoulder pain. stiffness generalized aches and pains. His ESR is 85, what is most likely diagnosis?
 a. Ankylosing Spondylitis
 b. Polymyalgia Rheumatica
 c. Giant Cell Arthritis
 d. SLE

Ans: B

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Rheumatology

109. A 35 years old female presents with 6-month History of fingers turning pale in cold (Raynaud's phenomenon) also having mild dyspnea with no wheeze, B/L pleural effusion, creatinine was high, urea also raised, ANA positive. What is the diagnosis?
   a. Discoid lupus erythematosus
   b. Polymyositis
   c. Dermatomyositis
   d. Sjogren Syndrome
   e. Progressive Systemic Scleroderma

Ans: E

110. Which among the following connective tissue disease can cause death by hypertensive renal disease?
   a. MCTD
   b. RA
   c. Scleroderma

Ans: C

111. A 60-year-old female presents with blanching of fingers on cold exposure since childhood. Now there is increasing edema of hands and fingertips infarcts and heart burn, what is your diagnosis?
   a. Primary Raynaud's disease
   b. Scleroderma
   c. Sarcoidosis
   d. Dermatomyositis

Ans: B

112. CREST syndrome consists of all of the following except?
   a. Calcinosis
   b. Sclerodactyly
   c. telangiectasia
   d. Rheumatoid arthritis
   e. Raynaud's

Ans: D

113. Rapid hypertensive renal crisis most commonly occurs in which of the following?
   a. Dermatomyositis
   b. Polymyositis
   c. Scleroderma
   d. SLE
   e. RPGN

Ans: C

114. Old lady with difficulties in swallowing, bruises skin, poor lady can't type on keyboard, diagnosis?
   a. Polymyositis
   b. Dermatomyositis
   c. Sjogren Syndrome
   d. Systemic sclerosis

Ans: D

Radiant Notes

Systemic Sclerosis

- More common in females
- Definitions:
  - Scleroderma= presence of tight, thickened skin.
  - Systemic sclerosis= Scleroderma + internal organ involvement

Clinical features

- Skin:
  - Tightening and thickening of skin
  - Mouse-like facies and purse string mouth
  - Sclerodactyly (claw-like appearance of the hand)
- Gastrointestinal
  - **Dysphagia,** gastric outlet obstruction, erosive esophagitis
- Pulmonary (Major cause of mortality and morbidity):
  - Pulmonary HTN, pulmonary fibrosis
- Renal:
  - Hypertensive renal crisis—characterized by acute onset malignant HTN and renal failure
- Miscellaneous:
  - **Raynaud's phenomenon,** Amenorrhea and infertility

2 major types

Limited cutaneous systemic sclerosis	Diffuse cutaneous systemic sclerosis
❖ More common (70% cases)	❖ Less common (30% cases)
❖ Skin thickening on distal extremeities and face only	❖ Skin thickening on distal extremeities, face and trunk
❖ Pulmonary HTN>> Pulmonary Fibrosis	❖ Pulmonary Fibrosis>> Pulmonary HTN
❖ Prognosis good	❖ Prognosis bad
❖ **Anti-centromere antibodies (60%)**	❖ **Anti-scl-70 antibodies (30%)**
❖ CREST syndrome: i.e. Calcinosis, Raynaud phenomenon, Esophageal dysmotility, Sclerodactyly, Telangiectasia	❖ Raynaud's phenomenon

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115. **Which of the following disease has least severity?**
a. Raynaud's disease
b. Anterior tibial syndrome
c. Scleroderma
d. Thrombophlebitis

Ans: A

116. **A 31-year-old woman presents as her fingers intermittently turn white and become painful. She describes the finger first turning white, then blue and finally red. This is generally worse in the winter months. Which one of the following treatments may be beneficial?**
a. Pregabalin
b. Propranolol.
c. Nifedipine
d. Amitriptyline

Ans: C

117. **A middle-aged woman has Raynaud's phenomenon associated with systemic sclerosis. which of the following is the most appropriate management for the conditions?**
a. Warm clothing
b. Beta blockers
c. Amphetamines
d. Ergotamine

Ans: A

118. **A 55-year female presents with 4 months' history of blurring of vision and itching on both the eyes. She also complains of dysphagia and dryness of mouth. O/E she has B/L parotid swelling and fibroid mouth fissures. CXR shows pneumonitis. The most likely diagnosis is?**
a. Progressive scleroderma
b. Mikulicz syndrome
c. Sjogren syndrome
d. Polymyositis
e. Polyarteritis nodosa

Ans: C

119. **Sjogren syndrome associated with?**
a. RA
b. IBS
c. Ankylosing spondylitis

Ans: A

120. **A young woman complains of dry mouth and dry eyes. Which investigation will give clue to her diagnosis?**
a. Anti SSA
b. ANA
c. RA factor
d. ANCA

Ans: A

121. **A young girl presented with malar rash, polyarthritis swelling in hand sensitive to heat and cold, ANA positive what is next investigation?**
a. CRP level
b. Serum complement C1 level
c. Anti RNP
d. Rheumatoid factor

Ans: C

122. **Female patient presented with fatigue, arthritis and myalgia, lab investigations shows protein 2+, ANA positive, Anti-RNP positive, and anti-smith antibodies positive, diagnosis?**
a. SLE
b. Drug induced lupus
c. Dermatomyositis
d. Mixed connective tissue disorder

Ans: D

123. **Differentiating point between SLE and mixed connective tissue disease is?**
a. Scleroderma
b. Myositis
c. Raynaud's
d. Arthritis
e. Renal involvement

Ans: A

Radiant Notes

Sjogren syndrome
- Autoimmune disorder affecting exocrine glands resulting in dry mucosal surfaces.
- It may be primary (PSS) or secondary to rheumatoid arthritis or other connective tissue disorders.
- Much more common in females

Features:
- Dry eyes, dry mouth keratoconjunctivitis sicca
- Arthralgia, myalgia

Investigation:
- RA factor positive (100%), ANA positive (70%)
- anti-Ro (SSA) antibodies, anti-La (SSB) antibodies

Mixed connective tissue disease
- Features of;
  - SLE
  - Systemic sclerosis and
  - Polymyositis
- **Anti-RNP positive**

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Rheumatology

124. Most common bone disease worldwide
a. Osteomalacia
b. Rickets
c. Paget's disease
d. Osteoporosis
e. Osteogenesis imperfecta

Ans: D

125. *Which of the following* is a non-skeletal *manifestation* of Osteomalacia?
a. Hyperphosphatemia
b. Hypo parathyroid
c. Proximal myopathy
d. Nephrocalcinosis
e. Hypercalcemia

Ans: D

126. *Female* presented with muscle weakness, on labs shows Low calcium and increase PTH, diagnosis?
a. Osteoporosis
b. Osteopetrosis
c. Osteomalacia

Ans: C

127. Female patient presented with backache, labs are normal, while bone density is decreased, diagnosis?
a. Osteomalacia
b. Rickets
c. Paget's disease
d. Osteoporosis

Ans: D

128. Which of the following is most common biochemical manifestation of Osteomalacia?
a. Hyperphosphatemia
b. Decreased vitamin D
c. Hypercalcemia
d. Low alkaline phosphatase

Ans: B

129. Regarding Rickets
a. Defective matrix synthesis
b. Defective mineralization in children
c. Associated with hypophosphatemia syndrome
d. Fractures are not a feature
e. Primary deficiency is of calcium

Ans: B

130. A mother of 5 children complain of pain in both shoulders. What should be done next?
a. Ca
b. Vitamin D levels
c. Ca/ Po4
d. ALP
e. Muscle biopsy

Ans: B

Radiant Notes

Osteoporosis

- Characterized by a **decrease in bone mass with normal serum Ca++ and PO4-**
- Cause may be impaired synthesis or increased resorption of bone matrix protein because of
  - Postmenopausal state (estrogen deficiency is a presumptive cause)
  - Physical inactivity
  - Calcium deficiency
  - Can be secondary to drugs (e.g., steroids)
  - Non-skeletal manifestation--- secondary hyperthyroidism, seizures, Nephrocalcinosis
- Results in bone structures inadequate for weight bearing can lead to vertebral compression fractures
- Diagnosed by a DEXA scan
- Treatment—vit D/ Ca++ supplements- & Bisphosphonates (alendronate)

Osteomalacia

- Vitamin D deficiency in adults.
- Defective calcification of osteoid matrix is characteristic.
- When secondary to renal disease, Osteomalacia is called renal osteodystrophy

Paget disease of bone (osteitis deformans)

- Disorder of bone remodeling caused by ↑ osteoclastic activity followed by ↑ osteoblastic activity that forms poor-quality bone and mosaic pattern
- Complications:
  - Bone pain resulting from fractures: although bone is thick, it lacks strength; fractures can lead to deformity.
  - High-output cardiac failure & Hearing loss

Disorder	Serum Ca2+	PO_4^{3-}	ALP	PTH
Osteoporosis	---	---	---	---
Osteopetrosis	---/↓	---	---	---
Paget disease of bone	---	---	↑	---
Osteomalacia/Rickets	↓	↓	↑	↑

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131. **Patient with bone pains having normal Ca, Inc Alkaline phosphatase. Most likely suffering from:**
   a. Paget's disease
   b. Hyper PTH
   c. Hyper Vit D,
   d. Bone mets
   e. Osteomalacia

Ans: **A**

132. **50-year-old male complains of difficulty in hearing. Investigations. reveal raised alkaline phosphatase levels. What is the diagnosis?**
   a. Alport's syndrome
   b. Acoustic neuroma
   c. Multiple myeloma
   d. Paget's disease

Ans: **D**

133. **A 56-years-old male presents with low backache, His lab show ALP= 900, Ca 8.8mg /dL, possible diagnosis?**
   a. Osteoporosis
   b. Osteoarthritis
   c. Multiple myeloma
   d. Paget's disease

Ans: **D**

134. **To monitor Paget disease which of the following parameter is checked?**
   a. PO4
   b. PTH
   c. ALP
   d. Ca++

Ans: **C**

135. **Which of the following laboratory findings occur in Paget's disease?**
   a. Increased ALP and increase calcium
   b. Normal ALP and decreased calcium
   c. Increase ALP normal Calcium
   d. Normal ALP and Normal calcium

Ans: **C**

136. **Hydroxyproline in urine is increased in:**
   a. Hyperparathyroidism
   b. Osteoporosis
   c. Osteomalacia
   d. Paget's disease
   e. multiple myeloma

Ans: **D**

137. **A 50-year-old male with hearing aids presents with bilateral leg pain. X-ray shows fractures both femoral heads, diagnosis?**
   a. Multiple myeloma
   b. Osteoporosis
   c. Metastatic bone disease
   d. Paget's disease

Ans: **D**

138. **56-years-old female patient with lower back pain, family history of breast cancer, labs shows normal calcium, normal phosphate. What is best initial treatment?**
   a. Start hormonal replacement therapy
   b. Bisphosphonate+ calcium
   c. Bisphosphonate only
   d. Calcium + vitamin D

Ans: **C**

139. **Which one of the following is not a risk factor for developing osteoporosis?**
   a. Obesity
   b. Smoking
   c. Premature menopause
   d. Sedentary lifestyle

Ans: **A**

140. **A 32-year-old obese female presents with pain in lower back radiating to the right leg, choice will be?**
   a. X-ray lumbar spine
   b. CT lumbar spine
   c. MRI lumbar spine

Ans: **C**

141. **A laborer lifts rods for construction. he develops weakness of right leg. How will you investigate him to make a final diagnosis?**
   a. Cervical spine X-ray
   b. EMG
   c. NCS
   d. MRI spine

Ans: **D**

142. **Young man after weight lifting Straight leg rise <60**
   a. NSAIDS with early mobilization
   b. Complete bed rest
   c. MRI
   d. Xray

Ans: **A**

- ✓ First step----analgesia, physiotherapy, exercises
- ✓ If symptoms persist then referral for consideration of MRI is appropriate
- ✓ Ref: MRCP pass medicine notes page 1299

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143. A patient presented with Dryness of eyes, and multiple joint pains, Schirmer's test suggestive as well, investigations shows Anti-RO antibodies, anti-LA antibodies, ANA positive, diagnosis?

a. Progressive scleroderma
b. Rheumatoid arthritis
c. Sjogren syndrome
d. Polymyositis
e. Polyarteritis nodosa

Ans: C

---

144. Brahman sign is seen in?

a. Osteochondroma
b. Osteoid osteoma
c. Osteoblastoma

Ans: A

---

145. A 12-year-old boy presents with upper and lower limb weakness for the last 6 years examination reveals grade 3 muscle power of pelvic and shoulder girdle. rest of the examination is normal. what type of dystrophy he has?

a. Becker muscular dystrophy
b. Duchenne muscular dystrophy
c. Facioscapulohumeral dystrophy

Ans: B

---

146. A patient presented to you in OPD with complain of pain in right shoulder. When you examine the patient, his pain worsens on active movements but not in passive movements. your diagnosis will be?

a. Bursitis
b. Biceps tendonitis
c. Adhesive capsulitis
d. Tendonitis

Ans: C

---

147. A pregnant female presented with tingling of thumbs, index and middle fingers most likely cause is?

a. Carpel tunnel syndrome
b. Vitamin D deficiency
c. Hypocalcemia

Ans: B

---

148. A patient with oral and genital ulcers with arthritis, diagnosis?

a. Behcet's disease
b. Crohns disease
c. HSV

Ans: A

---

149. Regarding Behcet's disease

a. Most common in china and UK
b. Genital ulcers are diagnostic
c. Pathergy test is specific
d. Colchicine is the drug of choice
e. Oral ulcers are less common

Ans: D

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150. Syndesmophyte are seen in?

a. Ankylosing spondylitis
b. Reiter arthritis
c. Septic arthritis
d. Osteoarthritis

Ans: A

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Chapter: 9 Infectious Diseases

1. **A tourist from UK wants to visit Pakistan, what malaria prophylaxis you will advise to him?**
   a. Start antimalarial 1 week before
   b. Start antimalarial 1 week after
   c. Start antimalarial 2 weeks after visit
   d. There is no need

Ans: A

2. **In malaria, what is the stage of plasmodium which attacks RBCs?**
   a. Schizonts
   b. Merozoites
   c. Hypnozoites
   d. Sporozoites

Ans: B

3. ***Malaria resistant to chloroquine is treated by?***
   a. Artesunate
   b. Mefloquine
   c. Primaquine
   d. Proguanil

Ans: A

4. **Regarding malaria, it can affect.**
   a. RBC only
   b. Platelets only
   c. More than 2 cell lines

Ans: C

5. **A patient returned from SIBI, treatment with chloroquine advised, but malaria didn't settle. now primaquine given, cause:**
   a. Plasmodium Ovale
   b. Plasmodium Vivax
   c. plasmodium Falciparum
   d. plasmodium Malariae

Ans: B

6. **Malignant malaria is due to:**
   a. Plasmodium Ovale
   b. Plasmodium Vivax
   c. Plasmodium Falciparum
   d. Plasmodium Malariae

Ans: C

7. **A Patient with malaria develops vesicular rash at angle of mouth. Related complication may be?**
   a. Myocarditis
   b. Meningitis
   c. Black water fever
   d. Cerebral malaria

Ans: B

Radiant Notes

Malaria

Organism-----Plasmodium (4 species)

- P. Vivax, P. Ovale, P. Falciparum, P. Malariae
- New specie: P. knowlesi is currently considered as the fifth species causing malaria
- **P. malariae is associated with nephrotic syndrome**

Introduction

- Fever, headache, anemia, splenomegaly
- P. Vivax/ovale
  - 48-hr cycle (tertian fever- fever on every 3rd day)
  - **Have a hypnozoite stage** and may therefore relapse following treatment—Rx with primaquine after giving chloroquine
- P malariae
  - 72-hr cycle (Quartan)
- P. falciparum (Malignant malaria)
  - Severe; **irregular fever patterns; cerebral malaria, hemoglobinuria, black water fever**

Treatment (NICE Guidelines)

- P. Vivax/ovale or malariae
  - Chloroquine (**Contraindicated in epilepsy**)
- <u>P. falciparum uncomplicated</u>
  - *artemisin based combinations*
- <u>Sever falciparum malariae</u>
  - IV artesunate
  - If parasite count >10%--exchange transfusion
  - Shock may indicate co-existing bacterial infection—malaria rarely causes hemodynamic collapse

Prophylaxis

- Chloroquine (1 week before and 4 weeks after travel)
- If Chloroquine resistant area
  - Malarone (atovaquone + proguanil),
  - Mefloquine (avoid in epilepsy patient),
  - Doxycycline
- If children
  - Diethyltolumide
  - Doxycycline (if age >12 years)

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8. A child presented to OPD with 104 fever for last 4 days. He has been passing cola colored urine for the last one day. Labs shows deranged LFTs are increased unconjugated bilirubin. Which one of the following is responsible?
   a. Plasmodium Ovale
   b. Plasmodium Vivax
   c. Plasmodium Falciparum
   d. Plasmodium Malariae
   e. Paroxysmal nocturnal hemoglobinuria

Ans: C

9. Patient comes with fever, leucopenia and lymphocytosis. What is the diagnosis?
   a. Enteric fever
   b. Dengue
   c. Malaria
   d. Liver abscess

Ans: A

10. Regarding typhoid antigen which is INCORRECT?
   a. Vi antigen shows carrier state
   b. O antigen shows active disease
   c. H antigen shows previous infection
   d. Vi antigen show active disease

Ans: D

11. Typhoid H antigen signifies:
   a. Acute infection
   b. Previous infection
   c. Convalescent phase
   d. Acute on chronic

Ans: B

12. A patient with constipation, abdominal pain. He is having headache, nuchal rigidity, having fever of 102 but pulse 90. Diagnosis?
   a. Enteric fever
   b. Malaria
   c. Measles
   d. Dengue fever

Ans: A

13. Patient with high grade fever of 103 and constipation, on examination splenomegaly, best test for enteric fever on 8th day?
   a. Blood culture
   b. Typhidot
   c. Widal test
   d. Stool culture

Ans: A

14. A patient presented with high grade fever and Spleenomegaly diagnosed as enteric fever, he developed sudden diffuse pain in abdomen along with vomiting, most likely cause is
   a. Pancreatitis
   b. GERD
   c. Perforation

Ans: C

Radiant Notes

Typhoid and Paratyphoid Fever (aka Enteric fever)

Clinical features:

1st week	❖ High grade fever –**continuous** ❖ Headache, anorexia, abdominal pain ❖ **Constipation** (due to payers patches narrowing lumen) ❖ Relative bradycardia
2nd week	❖ **Rose-Spots** (*rash on upper abdomen and lower chest which blanch on pressure*). ❖ Splenomegaly. ❖ Distention of abdomen. ❖ Diarrhea
3rd week	❖ Laying still, delirious ❖ Life threating complications ○ **GI bleed and perforation**—(most common), Myocarditis, pneumonia, pancreatitis
4th week	❖ Recovery period begins if patient survives

Diagnosis (Mnemonic: BASU)—remember culture is the gold standard

- 1st week → Blood culture,
- 2nd week → Agglutination + *Blood culture* (Widal test/ Typhidot),
  - ✓ Widal test
    - Antibody > 1:160 → suggestive and diagnostic
    - H antibody → signifies previous infection
- 3rd week → Stool culture,
- 4th week → Urine culture

Management

❖ Specific (any one of the following)
- Ceftriaxone, Cefixime, Fluoroquinolones such as ofloxacin

❖ Prevention
- Hand washing, improved hygiene, Eggs should be thoroughly cooked and never eaten raw.
- Passive immunization.
  - ✓ TAB vaccine 0.25 ml subcutaneously.
  - ✓ Oral vaccine (vivotef)
    - Four capsules on alternate day in children older than 6 years

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15. **Which of the following is seen in salmonella infection?**
    a. Raised ESR and thrombocytosis
    b. Leucopenia and lymphocytosis
    c. Thrombocytopenia and lymphocytosis
    d. Anemia and thrombocytosis

Ans: B

16. **Hematological changes of Dengue fever are;**
    a. Leukopenia & thrombocytopenia
    b. Leukopenia & lymphocytosis
    c. Neutropenia & lymphocytosis

Ans: A

17. **A 30 years old businessman presents to you in OPD with high grade fever. He also complains of body aches with non-blanching purpura. Your diagnosis will be:**
    a. Dengue fever
    b. Yellow fever
    c. Fulminant hepatitis

Ans: A

18. **A 29 years old male presents to you in emergency department with complain of fever, retro orbital pain, myalgia and generalized body rash. what will be your diagnosis?**
    a. ITP
    b. TTP
    c. Dengue fever
    d. Yellow fever

Ans: C

19. **Faget sign is seen in?**
    a. Dengue fever
    b. Yellow fever
    c. Malaria
    d. Hepatitis

Ans: B

20. **Hemorrhagic fever conference between Pakistan and south Africa will discuss which disease?**
    a. Congo fever
    b. Dengue fever
    c. Yellow fever
    d. Malaria

Ans: B

21. **A patient presented with high grade fever & jaundice on examination hepatosplenomegaly, low BP, petechia, positive tourniquet test, labs shows increased bilirubin, diagnosis?**
    a. Dengue hemorrhagic fever
    b. Malaria
    c. Enteric fever

Ans: A

Radiant Notes

Dengue fever

- **Introduction:**
  - Causative Agent: Dengue virus (4 serotypes)
  - Mode of transmission: Bite of Female mosquitoes --**Aedes aegypti (mainly)** & Aedes. Albopictus (lesser extent)
    - Remember: Unlike other mosquitoes Ae. Aegypti is a day-time feeder; its peak biting periods are early in the morning and in the evening before dusk.
- **Clinical features:**
  - High grade fever- abrupt onset- - continuous fever pattern,
  - Severe headache (often Periorbital pain)
  - Muscle and joint pain
  - Maculopapular rash
  - **Dengue hemorrhagic fever (Bleeding) & dengue shock syndrome:**
- **Diagnosis:**
  - Dengue NS-1--- in early stages
  - Dengue serology ---IgG and IgM--- in later stages
- **Management:**
  - Supportive and symptomatic management

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Infectious Diseases

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22. Most common complication of mumps in adults is?

a. Lung abscess
b. Pneumonia
c. Meningitis
d. Orchitis
e. Encephalitis

Ans: **D**

23. Patient presented with Bilateral parotids enlargement, now signs and symptoms of meningoencephalitis, diagnosis?

a. Mumps
b. Tuberculous meningitis
c. Cerebral malaria

Ans: **A**

24. A patient presented with Fever and maculopapular rash, he describes it as the rash beginning at back of scalp and spread below, likely diagnostic organism?

a. Mumps
b. Rubeola
c. Rubella
d. Varicella zoster
e. Enteric fever

Ans: **B**

25. Patient wd fever maculopapular rash begins from face, grey spots in oral cavity, diagnosis?

a. Rubeola
b. Rubella
c. Herpes

Ans: **A**

26. Test to perform in case of mumps?

a. Fecal elastase
b. Urine R/E
c. Amylase
d. Lipase

Ans: **C**

27. The primary route of administration of measles vaccination is?

a. Subcutaneous
b. Intradermal
c. Intravenous
d. Intranasal

Ans: **A**

28. A Child with Koplik spot and rash which he got from school child, labs shows parvovirus b19 IgM positive, diagnosis?

a. Erythema infectiosum
b. Measles
c. Varicella zoster

Ans: **B**

Radiant Notes

Mumps

- Clinical features:
  - Fever, **swollen salivary glands, especially parotid glands** (can be unilateral or bilateral- bilateral more common)
- Complications
  - Meningoencephalitis----most common in children
  - Epididymo-orchitis
    - ✓ **Most Common in adults**, but rare before puberty
    - ✓ Affected testis may atrophy but sterility is rare.
  - Pancreatitis
  - Oophoritis
  - Myocarditis & arthritis
- Treatment: supportive care

Measles (Rubeola)

- Clinical features
  - 3 C's Cough, Coryza, Conjunctivitis, then
  - **Koplik spots** (grayish-white spots on buccal mucosa)
  - Maculopapular rash; starts at head (nape of neck and behind ears) and spreads downward & fades in same manner
- Complications
  - Otitis media –most common
  - Bacterial pneumonia also most common complication and the most common cause of mortality.
  - Encephalitis
  - Subacute sclerosing panencephalitis (SSPE) -- is a rare late complication
- Treatment
  - supportive, vitamin A, vaccination (6-9 months of age for infants)
  - Non immunized persons----vaccination should be done within 72 hours if comes in contact

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29. A banker with sore throat, fever. On examination he has grey plaques on his tonsils, cervical lymphadenopathy and splenomegaly, labs show derange LFTS, what is the most likely diagnosis?

a. Streptococcus infection
b. Borrelia vincenti infection
c. Diphtheria
d. Infectious mononucleosis
e. Toxoplasmosis

Ans: **D**

30. Long term complication of infectious mononucleosis?

a. GBS
b. hemolytic anemia
c. Splenic rapture

Ans: **C**

31. 28-year male presented with fever and cervical lymphadenopathy, Doctor gave him some medication developed skin rash, diagnosis?

a. Herpes
b. Infectious mononucleosis
c. Drug reaction
d. Tuberculosis
e. Lymphoma

Ans: **B**

32. Young patient has fever, lymphadenopathy and atypical lymphocytes on blood film. What is the diagnosis?

a. Syphilis
b. Malaria
c. Infectious mononucleosis
d. Brucellosis

Ans: **C**

33. Diagnostic test for infectious mononucleosis?

a. Throat swab
b. Blood smear
c. Heterophile antibody
d. White cell count
e. Peripheral smear

Ans: **C**

34. A 30-year man with sore throat and cervical lymphadenopathy. CBC picture shows presence of atypical lymphocytes. The most important test in this setting is?

a. Monospot test
b. Mantoux test
c. Lymph node biopsy
d. Blood culture
e. X-ray

Ans: **A**

Radiant Notes

Infectious mononucleosis

- Caused by herpes virus (Epstein-Barr virus (HHV-4))
- ⊕ Monospot test → heterophile Antibodies

Clinical features:

- Fever, sore throat
- Cold autoimmune hemolytic anemia
- hepatosplenomegaly, lymphadenopathy
- Associated with lymphomas (e.g., Burkitt lymphoma)
- Type of cell affected = B-cells
- Atypical cells that proliferate in response= T-cells

Hint:

- **Hint----URTI + taken amoxicillin/ampicillin develops maculopapular pruritic rash---diagnosis is of IM**

Treatment:

- Analgesics, drink plenty of fluid, avoid alcohol
- Avoid playing contact sports to avoid risk of splenic rupture

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Infectious Disease

35. **Hostel mates started to have diarrhea and vomiting after 5 hours of eating food. What is the organism responsible for it?**
    a. Klebsiella
    b. E. Coli
    c. Staph. aureus
    d. Vibrio cholera

Ans. C

36. **Most prominent feature of s. aureus poisoning is:**
    a. Vomiting
    b. Diarrhea
    c. Abdominal pain
    d. Fever

Ans: A

37. **5 persons developed diarrhea, nausea, vomiting and abdominal cramps 3-hours after a meal, which include chicken salad and cream filled pastries. what is the likely organism?**
    a. C botulism
    b. Clostridium perfringens
    c. Staphylococcal infection
    d. Salmonella species

Ans. C

38. **A patient comes to you with diarrhea. he tells you that duration of diarrhea is now 6 weeks, he had bulky stools and history of travel. what is your diagnosis?**
    a. Shigellosis
    b. Giardiasis
    c. Amebiasis
    d. Cholera

Ans. B

39. **A 50 years old male develop nausea, abdominal cramps, 30-hours after arriving in Mexico. Organism responsible?**
    a. Salmonella
    b. Shigella
    c. E. coli
    d. Campylobacter

Ans. C

40. **A school boy had dinner in 5 hotels, then presented in ER at 1:00 am with acute gastroenteritis?**
    a. S. aureus
    b. C. difficile
    c. Salmonella
    d. B. cereus

Ans: A

Radiant Notes

Diarrhea with Respect to Time

1-6 hours	❖ Staph aureus (vomiting predominant). ❖ Bacillus
12-48 hours	❖ Salmonella ❖ E. coli (Abdominal cramps + nausea)
48-72 hours	❖ Shigella, Campylobacter
> 7 days	❖ Giardiasis, Amoebiasis

Organisms causing diarrhea

Giardiasis	❖ Organism: Giardia lamblia ❖ Bloating, flatulence, **foul-smelling**, fatty diarrhea ❖ Treatment ❖ Metronidazole
Amebiasis	❖ Organism: Entamoeba histolytica ❖ Bloody diarrhea (dysentery), liver abscess, histology shows, **flask-shaped ulcer** Treatment ❖ Metronidazole
Cryptosporidium	❖ **Severe** diarrhea in **AIDS** Treatment ❖ Supportive ❖ Severe cases-Nitazoxanide
Clostridium difficile	❖ Pseudomembranous Colitis often 2° to antibiotic use Treatment ❖ Metronidazole (10-14 days), if no response then oral Vancomycin ❖ For life threating complications metronidazole +vancomycin
Vibrio cholera	❖ **Produces** profuse rice-water diarrhea via enterotoxin ❖ Transmitted via ingestion of contaminated water or uncooked food (e.g. raw shellfish)

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41. A patient underwent abdominal surgery, he used some antibiotics for three days and finally developed diarrhea. Which organism is responsible?

a. Clostridium perfringens
b. Clostridium difficile
c. Streptococcus diarrhea
d. Staphylococcal

Ans: B

42. Hospitalized old male patient developed diarrhea and abdominal pain. Clostridium difficile toxin positive. Colonoscopy shows diffuse colonic thickening, Diagnosis?

a. Ischemic colitis
b. Mesenteric ischemia
c. Pseudomembranous colitis
d. Ulcerative colitis

Ans: C

43. A 30-year-old male presents with cough, shortness of breath, fever and diarrhea. What is the causative organism?

a. E-coli
b. Shigella
c. Mycoplasma
d. Campylobacter

Ans: C

44. Drug of choice for traveler's diarrhea

a. Azithromycin
b. Ciprofloxacin
c. Cephalosporin
d. Atropine

Ans: B

45. Patient was of diarrhea and diagnosed as giardiasis, what will you see on stool examination?

a. Numerous cysts
b. Trophozites only
c. Cysts and Trophozites

Ans: C (Ref: First aid USMLE step 1 edition 2019 page: 155)

46. Foul smelling diarrhea with vomiting is a feature of?

a. Entamoeba histolytica
b. Vibrio Cholera
c. Giardia lamblia
d. Echinococcus granulosus

Ans: C

47. A patient presented in ER with Profuse diarrhea; likely responsible organism is?

a. Entamoeba histolytica
b. Staph aureus
c. Streptococcus pyogenes
d. V. cholera

Ans: D

48. Most common organism causing chronic diarrhea in HIV patient is?

a. Cryptococcus Neoformans
b. Clostridium difficile
c. Cryptosporidium

Ans: C

49. A patient after starting on clindamycin developed diarrhea, how will you treat him?

a. Ampicillin
b. Ceftriaxone
c. Clarithromycin
d. Vancomycin

Ans: D (No option of metronidazole---if present prefer it—for rest read above theory)

50. In a patient diarrhea are corrected after the fasting. Which is most likely type of diarrhea?

a. Infectious
b. Psychogenic
c. Osmotic
d. Metabolic
e. Toxic

Ans: C

51. Patient presented with Bloody diarrhea, RUQ pain, liver abscess, flask shaped ulcer, causative organism

a. Entamoeba histolytica
b. E. coli
c. Campylobacter jejuni
d. Giardia lamblia

Ans: A

52. Man presents with diarrhea followed by vomiting, rapid dehydration, dry tongue BP of 90/40 Microscopic examination shows coma shaped organism. Organism responsible?

a. Entamoeba histolytica
b. Giardia lamblia
c. Vibrio cholera
d. Shigella

Ans: C

53. 25-year-old male visited Thailand, developed severe diarrhea, finding of doughnut shaped cyst, diagnosis?

a. Campylobacter jejuni
b. Giardia lamblia
c. Cryptosporidium
d. E. Coli

Ans: C

54. A patient presented in emergency department with severe watery stools (12-18 stools per day) for last 24 hours. labs show increase in urea and creatinine. what is the cause?

a. Vibrio cholera

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b. campylobacter jejuni
c. Clostridium perfringens
d. Clostridium difficile.

Ans: **A**

55. HIV patient develops white plaques over the lateral surface of tongue. What is the diagnosis?
a. Candidiasis
b. HSV infection
c. HPV infection
d. Hairy cell leukoplakia

Ans: **D**
- ✓ Candida albicans----Scrapable white plaque, pseudo hyphae on microscopy
- ✓ Oral hairy leukoplakia ----Unscrapable white plaque on lateral tongue

56. If HIV patient comes with esophagitis, endoscopy shows multiple ulcers. What is the diagnosis?
a. Cytomegalovirus
b. EBV
c. Cryptococcus
d. Candidiasis

Ans: **A**
- ✓ Both candida and CMV can cause esophagitis—difference is and choose accordingly in exam
- ✓ Candida albicans---- Esophagitis---- White plaques on endoscopy
- ✓ CMV---- Esophagitis--------Linear ulcers on endoscopy

57. HIV, at which CD4 count AIDS is diagnosed?
a. <50
b. 250
c. 350
d. 550

Ans: **B**

58. Most common severe ocular complication of AIDS
a. CMV retinitis
b. Cataracts
c. Corneal ulcers

Ans: **A**

59. A patient with HIV having painful swallowing. OGD done showed multiple ulcers. Organism responsible?
a. EBV
b. Cryptococcus
c. Candidiasis
d. CMV

Ans: **D**

60. Regarding HIV by enzyme linked immunoassay (ELISA) which of the following is correct:
a. ELISA is the most specific test for HIV
b. ELISA is excellent screening test
c. Western Blot test is more sensitive

Ans: **B**

Radiant Notes

HIV
- **HIV destroys CD4+ cells** —weakens immune system
- **Start antiretroviral therapy in HIV when CD4 count is less than 350 × 10⁶/L**

AIDS
- **AIDS diagnosis ≤ 200 CD4+ cells**/mm3 (normal: 500–1500 cells/mm3)
- Diagnosis:
  - Presumptive test → ELISA
  - Confirmatory: Western blot assay
  - For viral load → PCR
    - Note: ELISA/Western blot tests
    - Falsely ⊖ in the first 1–2 months of HIV infection
    - falsely ⊕ initially in babies born to infected mothers
    - Use PCR in neonates to detect viral load.

Common diseases of HIV-positive adults
- **CD4+ cell count < 500/mm3**
  - Candida albicans→ Oral thrush
  - EBV →Oral hairy leukoplakia
  - HHV-8 →Kaposi sarcoma
  - HPV → Squamous cell carcinoma, cervical cancer
- **CD4+ cell count < 200/mm3**
  - Pneumocystis jirovecii → Pneumocystis pneumonia "Ground-glass-pulmonary infiltrates" opacities on CXR
- **CD4+ cell count < 100/mm3**
  - Aspergillus fumigatus →Hemoptysis, Cavitation/infiltrates on chest imaging
  - Candida albicans → Esophagitis
  - CMV →Retinitis
  - Cryptococcus Neoformans →Meningitis
  - Mycobacterium avium
  - Toxoplasma gondii →Brain abscesses
  - Cryptosporidium→ most common causes of Diarrhea

Pneumocystis jirovecii/carinii
- Co-trimoxazole
- IV pentamidine in severe cases
- Steroids if hypoxic

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61. A patient 30-year-old male with recurrent infections, candidiasis, fever and weight loss. X ray chest shows bilateral consolidation, Most common possible diagnosis?

a. Aspergillosis
b. Sarcoidosis
c. PCP (Pneumocystis carinii)
d. Mycoplasma pneumonia

Ans: **C**

62. HIV +ive patient with CD4 count less than 200. Prophylaxis will be given against?

a. PCP
b. Hep B vaccine
c. Candida albicans

Ans: **A**

63. In HIV, Most common manifestation of CMV is?

a. Esophagitis
b. Hepatitis
c. Retinitis
d. Meningitis

Ans: **C**

64. Which of the following has increased risk of HIV transmission?

a. Sharing needles
b. IV drug abuse
c. Heterosexuals
d. Mucosal splash in eyes

Ans: **C** (Ref: Davidson 21st ed: page 317)

65. Most common cause of bacterial colitis in a HIV positive patient is?

a. Campylobacter
b. Salmonella
c. Clostridium difficile
d. Staph aureus

Ans: **C** (Ref: American study published in the December 1st edition of Clinical Infectious Diseases)

66. Oral candidiasis in young patient with no known risk factors. Predisposing condition in this patient is

a. HIV
b. Diabetes mellitus
c. Hypertension
d. Smoking

Ans: **A**

67. The AIDS virus infects:

a. Monocyte
b. T cells
c. B cells
d. Eosinophils
e. Basophils

Ans:

68. A 38 years old HIV positive patient is complaining of headache. On examination neck stiffness is positive, meningitis is suspected to be the cause. Which of the following is thought to be the number one cause in HIV/AIDS patient?

a. Streptococcus pneumonia
b. Streptococcus agalactiae
c. Cryptococcus neoformans
d. Listeria monocytogenes

Ans: **C**

69. HIV positive patient presented with meningitis. CSF shows raised protein and TLC count, with reduced glucose. CT brain is normal, diagnosis?

a. Bacterial meningitis
b. Viral meningitis
c. Tuberculous meningitis
d. Cryptococcal meningitis

Ans: **D**

70. Which of the following agent is useful in treatment of Cryptococcus neoformans meningitis?

a. Clindamycin
b. Ceftriaxone
c. Amoxicillin
d. Amphotericin B

Ans: **D**

71. Soap bubbles lesions in brain of immunocompromised peoples are formed by

a. Candida albicans
b. Aspergillus fumigatus
c. Cryptococcus neoformans
d. Mucormycosis

Ans: **C**

Radiant Notes

- **Cryptococcal meningitis:**
  - IV amphotericin B + Flucytosine for 2 weeks
  - Then fluconazole for 8 weeks

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72. Pregnant female is HIV positive, in order to prevent transmission into baby, which drug should be used?
a. Acyclovir
b. Sulfamethoxazole
c. Zidovudine
d. Fluconazole

Ans: **C**

73. A nurse got needle stick injury infected with HIV, what advice will you give to reduce transmission of HIV?
a. Zidovudine
b. Lamivudine
c. Zidovudine + Lamivudine + Tenofovir
d. Tenofovir
e. Suck back the blood

Ans: **C**

74. A 22-week pregnant female is diagnosed with toxoplasmosis. What is the treatment of choice?
a. No treatment required
b. Pyrimethamine
c. Ciprofloxacin
d. Spiramycin

Ans: **D**

75. Treatment of choice in a young male with toxoplasmosis?
a. Spiramycin
b. Ciprofloxacin
c. *Sulfadiazine* + Pyrimethamine
d. No treatment

Ans: **C**
- ✓ As per recall of few students both sulfadiazine and pyrimethamine was given as separate options---if such case choose pyrimethamine

76. Which investigation is done in a pregnant female who is suspected to have Toxoplasmosis?
a. Amniotic fluid D/R
b. PCR of amniotic fluid
c. Antibodies IgM

Ans: **B**

77. Patient with status of HIV positive having low CD4 count, CT brain shows multiple ring enhancing lesions, diagnosis?
a. *Toxoplasmosis*
b. CMV
c. EBV
d. HHV-8

Ans: **A**

Radiant Notes

HIV treatment
- ❖ Any regimen below
  - o 2 NRTI + 1 NNRTI
  - o 2 NRTI + 1 PI (use this regimen in pregnancy)
- ❖ Post exposure prophylaxis (health workers, rape, sexual exposure)
  - o **Zidovudine+ Lamivudine + Lopinavir/Ritonavir for 4 weeks**
  - o Start within 1-2 hours but may be started up to 72 hours
  - o Serological testing at 12 weeks following completion of post-exposure prophylaxis

HIV and pregnancy
- ❖ All pregnant women should be offered antiretroviral therapy regardless of whether they were taking it previously
- ❖ Even if the CD4 count is more than 350, start it at 20-32 weeks of gestation
- ❖ Mode of delivery
  - o If viral load < 50 copies/mL= vaginal delivery
  - o If viral load > 50 copies/mL= caesarian section
  - o **Zidovudine infusion = should be started four hours before beginning the caesarean section**
- ❖ Neonatal antiretroviral therapy
  - o If maternal viral load < 50 copies/mL = Zidovudine
  - o If maternal viral load > 50 copies/mL = Triple therapy (4- 6 weeks)

Toxoplasmosis:

Disease
- ❖ In AIDS/HIV → brain abscesses usually seen as multiple ring-enhancing lesions in basal ganglia
- ❖ Best initial test is elevated IgM to toxoplasma; most accurate test is PCR for toxoplasmosis.
- ❖ Treatment:
  - o Immunocompetent
    - ✓ Asymptomatic—No treatment
    - ✓ Symptomatic-- Sulfadiazine + pyrimethamine
  - o Immunocompromised
    - ✓ Prophylactic – TMP-SMX
    - ✓ Treatment: Sulfadiazine + pyrimethamine
  - o Pregnant: Spiramycin

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78. Visceral leishmaniasis presents with massive splenomegaly. which other complications is associated with this disease?

a. Meningitis
b. Ascites and edema
c. Lung fibrosis
d. Renal failure

Ans: **B**

79. 2-year-old boy from hilly areas presented with complaint of fever, easily fatigability. O/E B/L lymphadenopathy and hepatosplenomegaly present. Bloods reveal he has pancytopenia, Diagnosis?

a. Kala-azar (Leishmaniasis)
b. CML
c. Filariasis
d. Schistosomiasis
e. Malaria

Ans: **A**

80. A soldier returning with 3-day history of fever. Intercellular ameboid like organism seen with blue cytoplasm, likely diagnosis is

a. Leishmania
b. Trypanosomiasis
c. Falciparum
d. Babesiosis

Ans: **D** (Ref: Harrison's)

81. Treatment of visceral leishmania's

a. Sodium stibogluconate
b. Benznidazole
c. Amphotericin B
d. Metronidazole

Ans: **C**

82. 30-year-old male presents from Balochistan with abdominal pain. On examination there is palpable spleen upto umbilicus. What is the cause?

a. Leishmaniasis
b. CML
c. Chronic liver disease
d. Typhoid fever

Ans: **A**

83. Drug of choice for anthrax is:

a. Ciprofloxacin
b. Erythromycin
c. Amoxicillin
d. Ceftriaxone

ans: **A**

84. A young boy with suspected DKA developed nasal bleeding and blackish looking throat. Having the likely diagnosis of Mucormycosis what is the Tx of this case?

a. Fluconazole
b. Amphotericin B
c. Ciprofloxacin

Ans: **B**

85. A 45-year-old patient who was given a drug for treatment of Mucormycosis, now having increased creatinine. what is the name of the drug given?

a. Gentamycin
b. Clindamycin
c. Amphotericin
d. tetracycline

Ans: **C**

86. A middle-aged diabetic female develops proptosis with blackening of her face. Drug of choice?

a. Tetracycline
b. Cyclophosphamide
c. Methotrexate
d. Amphotericin

Ans: **D**

87. A young boy comes from Afghanistan. he had developed cutaneous leishmaniasis. Your drug of choice?

a. Fluconazole
b. Sodium stibogluconate
c. Miltefosine
d. Topical paromomycin
e. Intamuscular pentamidine

Ans: **B**

Radiant Notes

Leishmania

- Leishmania Donovani----Visceral leishmaniasis
  - kala-azar—spiking fevers, hepatosplenomegaly, pancytopenia
- Leishmania tropica/Mexicana----Cutaneous leishmaniasis
- Leishmania Brazilleus ----Mucocutaneous Leishmaniasis
- Spread by **Sand flies**
- **Biopsy=diagnostic**
- Treatment: Amphotericin B, Sodium stibogluconate

Anthrax bacillus

- **Painless** black skin lesions
- Treatment: ciprofloxacin

Mucormycosis

- In Diabetic and/or neutropenic patients (eg, leukemia).
- Headache, facial pain. **black necrotic eschar** on face; may have cranial nerve involvement.
- Treatment: surgical debridement, amphotericin B

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88. A patient with urethral discharge was given treatment for gonococcal infection but she is again presenting with symptoms, what is the cause of her present illness?
   a. Superimposed chlamydial infection
   b. Urease +ive organism
   c. Re-infection

Ans: A

1. Young male patient presented with high grade fever with rigors chills, pustules on extensor surface. Tender knee joint with synovial fluid exam reveal 55.000 leukocytes diagnosis?
   a. Streptococcal arthritis
   b. Gonococcal arthritis
   c. Tuberculosis arthritis
   d. Reiter syndrome

Ans: B

2. A young male patient presents with pain in knee joint examined the joint and found a pustule around the knee. what do you think he might have?
   a. Gonococcal arthritis
   b. Staph aureus arthritis
   c. Gout
   d. Reactive arthritis

Ans: A

3. Scenario of arthritis with haemorrhage rash on extensor surface of distal limbs?
   a. Staphylococcus
   b. Gonococcal
   c. Syphilis

Ans: B

4. Patient who is sexually active presented with joint pain, urethritis, and maculopapular rash, diagnosis?
   a. Gonococcal
   b. Staphylococcal
   c. Gout
   d. Reactive arthritis

Ans: A

89. Pregnant lady diagnosed with Chlamydia infection is allergic to penicillin, next treatment option for her?
   a. Ciprofloxacin
   b. Ofloxacin
   c. Erythromycin
   d. Doxycycline

Ans: C

90. Milky white discharge in urine and joint pain, organism?
   a. Bacteroides
   b. Gonorrhea
   c. Chlamydia
   d. Candidiasis

Ans: B

Radiant Notes

Chlamydia	Gonorrhea
❖ Chlamydia trachomatis, STD Serotypes A, B and C= **Trachoma** (follicular conjunctivitis with corneal scarring) Serotypes L1- L3= **Lymphogranuloma venerum** Serotypes D-K – **STD**	❖ Neisseria gonorrhea, STD
❖ Reiter's syndrome = Urethritis, conjunctivitis, arthritis ❖ Fitz- Hugh-Curtis syndrome= Peri-hepatic inflammation and fibrosis ❖ Infertility and ectopic pregnancy	❖ Local complications that may develop include urethral strictures, epididymitis and salpingitis (hence may lead to infertility). ❖ Disseminated Gonococcemia o Septic arthritis o Rash o Tenosynovitis
❖ Azithromycin 1g (single dose) ---first line treatment Or ❖ Doxycycline (7 days) ❖ If pregnant = erythromycin or amoxicillin	❖ Ceftriaxone 500 mg intramuscularly as a single dose with azithromycin 1 g oral as a single dose.
❖ **NAATs** (nuclear acid amplification test) = **investigation of choice**	❖ **Gram stain and culture=** ***Investigation of choice*** ❖ **NAATs** (*nuclear* acid amplification test)
❖ Men (symptomatic)= all partners within **<u>four weeks</u>** should be contacted ❖ Women and asymptomatic men= all partners from **<u>last 6 months</u>** should be contacted ❖ Contacts positive = offer treatment prior to investigation **(treat then test)**	**Gonorrhoea and Chlamydia co-infections are extremely common**
❖ Nonspecific urethritis= chlamydia	❖ Specific urethritis= gram negative diplococci= Gonorrhea

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91. A 20 years old male had developed burning micturition he had purulent discharge his urine cultural report showed gram negative diplococci with neutrophils. best treatment for him would be:

a. I/M ceftriaxone plus Azithromycin
b. Oral penicillin G
c. Oral cefixime
d. 1-month penicillin

Ans: **A**

92. A female patient develops abdominal pain and joint pain. There is adnexal tenderness on examination. What is the likely organism?

a. Chlamydia
b. Bacteroid
c. Gonorrhea
d. Trichomonas vaginalis

Ans: **C**

93. Investigation of choice is syphilis is:

a. VDRL
b. FTA-ABS
c. Blood culture
d. Urine culture

Ans: **B**

94. VDRL test came positive in asymptomatic man, what will you do next?

a. Blood TPHA
b. HIV Screening
c. CSF VDRL

Ans: **A**

95. A syphilis patient is allergic to penicillin. What treatment will you give

a. Erythromycin
b. Doxycycline
c. Azithromycin
d. Ciprofloxacin

Ans: **B**

96. Syphilis diagnosed by?

a. TPHA (Treponema pallidum Haemagglutination test)
b. VDRL
c. Blood culture

Ans: **A**

97. You see a patient with Tabes dorsalis. Which of the following can occur is this patient?

a. Optic atrophy
b. Cataracts
c. Dysphagia
d. Charcot joints

Ans: **D**

98. A female with pain less ulcer on vulva with indurated base and everted edges, investigation?

a. TPHA
b. VDRL
c. HSV PCR
d. Swab and culture

Ans: **A**

99. A young male presented with swelling in his groin with painless white rash in genitalis, which test should be done to confirm the underlying diagnosis?

a. FTA-ABS
b. VDRL
c. Gram stain CS

Ans: **A**

Radiant Notes

Syphilis

Caused by---treponema pallidum

Primary syphilis

- Localized disease presenting with **painless chancre**

Secondary syphilis

- Disseminated disease, maculopapular rash, condylomata lata (**painless, wart-like white lesions on genitals**), and lymphadenopathy.
- **Snail track ulcers** in buccal mucosa

Tertiary syphilis:

- Chronic granulomas. **Neurosyphilis (tabes dorsalis, Argyll Robertson pupil**- constricts with accommodation but is not reactive to light; also called "prostitute's pupil" since it accommodates but does not react).
- Signs: **broad-based ataxia, ⊕ Romberg, Charcot joint, stroke without hypertension.**

Diagnosis

- Specimen obtained from genital sores
- Diagnosis:
  - Serologic testing--- VDRL (nonspecific)
    - ✓ Becomes negative after treatment
    - ✓ Also raised in pregnancy, SLE, TB, leprosy, malaria and HIV
  - Confirmatory diagnosis--- **FTA-ABS, TPHA** (Treponema pallidum HaemAgglutination test)

Treatment:

- Benzylpenicillin, (alternative: doxycycline)

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100. A Patient presented with a small, painless papule, shallow ulcer on his genitalia and painful inguinal lymphadenopathy for last few days what is most likely Diagnosis?
   a. Primary syphilis
   b. Secondary syphilis
   c. Tertiary syphilis
   d. Lymphogranuloma Venereum

Ans: D

101. Genital ulcer with regional lymphadenopathy and are painless, rubbery & soft Lymph nodes, Diagnosis?
   a. Lymphogranuloma Venerum
   b. Genital Herpes
   c. Syphilis

Ans: C

102. Lymphogranuloma Venereum is caused by?
   a. HIV infection
   b. Leishmania Donovani
   c. Chlamydia
   d. Herpes genitalis

Ans: C

103. Patient with HIV have got 2 outbreak of Genital rash/ulcer what can be done next?
   a. Suppressive acyclovir
   b. Isoniazid with pyridoxine
   c. PCP prophylactic treatment
   d. Genital smear every 6 months

Ans: D

104. 27-year-old presented with painless ulcer on genitalis. he noticed that ulcer has eroded base with indurated margins. He also has painless inguinal lymphadenopathy and no ulcer *in oral cavity. Rest of physical and* systemic examination are normal. Diagnosis?
   a. Chancroid
   b. Behcet disease
   c. Genital herpes simplex
   d. Granuloma inguinale
   e. Syphilis

Ans: E

105. Recurrent painful genital ulcers, diagnosis?
   a. HSV
   b. Hemophillus ducreyi
   c. Syphilis

Ans: A

Radiant Notes

Genital lesions

Granuloma Inguinale (Aka Donovansois)	❖ Caused by Klebsiella granulomatosis ❖ **Painless ulcers** ❖ Azithromycin or doxycycline
Chancroid	❖ Caused by *Hemophillus* ducreyi ❖ **Painful ulcers (U cry with docreyi—note-- painful ulcers also seen with herpes)** ❖ Single dose of azithromycin or IM ceftriaxone
Lymphogranuloma Venerum	❖ Caused by Chlamydia trachomatis ❖ **Painless ulcer, painful inguinal lymphadenopathy** ❖ Doxycycline or Erythromycin
Herpes	❖ Caused by herpes virus ❖ Painful genital ulceration ❖ Treatment: acyclovir
Syphilis	❖ Caused by Treponema pallidum. ❖ **Painless ulcer (chancre)** is seen in the primary stage

- Note:
  - Painful: Chancroid, HSV
  - Painless: Chancre, LGV
- Other causes of genital ulcers
  - Behcet's disease (Classic trad of)
    - ✓ Oral ulcers,
    - ✓ Genital ulcers and
    - ✓ Anterior uveitis

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106. Lymphoma patient with herpes infection, took acyclovir for 3 days, but no improvement, treatment for him now?

a. IV acyclovir
b. Acyclovir plus steroids
c. Acyclovir + lamivudine + amantadine
d. IV foscarnet

Ans: D

107. A 20-year-old girl presents to you in OPD. she complains of dysuria and vesicular lesions with an erythematous base on her vulva. she also has tender lymphadenopathy. most likely organism will be:

a. CMV
b. Gonococcus
c. HSV-2
d. Treponema palladium

Ans: C

108. A patient presented with genital plus oral ulcers, diagnosis?

a. Behcet's disease
b. Syphilis
c. Chlamydia

Ans: A

109. 36 weeks pregnant lady develops varicella zoster infection, what will you advise?

a. Steroids
b. Immediate delivery
c. Acyclovir
d. Varicella immunoglobin within 72 hours

Ans: D

110. A patient developed lower motor neuron facial paralysis, there is also vesicular rash in external auditory canal, diagnosis?

a. Ramsay hunt syndrome
b. Lyme disease
c. Sarcoidosis
d. Tumor

Ans: A

111. A patient had shingles. Which drug would reduce his post herpetic neuralgia complications? Options were

a. Acyclovir
b. Gabapentin
c. Carbamazepine
d. Steroids

Ans: B

Radiant Notes

Herpes zoster

Clinical features: (mnemonic PDF)	Very Painful Dermatomal distribution of rash Fever o The rash may last as long as 4 weeks, with pain persisting for weeks or months o Post herpetic neuralgia ▪ It refers to the persistent pain for weeks to months following healing of the rash. ▪ Most common complication Ramsay Hunt syndrome o It occurs when virus involves geniculate ganglion o Presents with facial palsy, ipsilateral loss of taste plus vesicular rash in external auditory canal
Guidelines	❖ Doubt about mother immunized= check varicella antibodies first ❖ if not immune= VZIG (as soon as possible—effective up to 10days post exposure ❖ Oral acyclovir should be given to pregnant women = if present within 24 hours of rash

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Infectious Diseases

112. A lady presents to you in OPD and ulcer in her mouth. she tells you that she has ulcer once on the genital area. she also complains of joint swelling what will be your diagnosis?
   a. Sarcoidosis
   b. Lyme disease
   c. Behcet's disease

Ans: C

113. Ascitic tap done of a patient which shows gram negative rods. Organism responsible are
   a. E. coli
   b. Streptococcus
   c. Staphylococcus

Ans: A

114. Most common organism causing SBP is:
   a. Klebsiella
   b. Legionella
   c. Bacteroides
   d. S. Aureus
   e. E. coli

Ans: E

115. A 38-year-old male present to you in chest OPD with history of dry cough and SOB for 5 days preceded by flu like symptoms. On examination you noticed erythematous rash with "target lesions" which are symmetrical. What is the most likely organism?
   a. Pseudomonas
   b. Legionella
   c. Staph. Aureus
   d. Mycoplasma

Ans: D

116. A house officer in OPD want to treat a case of Methicillin resistant S. Aureus What is most appropriate antibiotic in this case?
   a. Co-amoxiclav.
   b. Vancomycin.
   c. Linezolid.
   d. Piperacillin.

Ans: B

117. What is true regarding erysipelas?
   a. It is responsive to macrolides
   b. Mainly affects neck area
   c. Due to exotoxin producing organism
   d. Identical to toxic epidermal necrolysis

Ans: C

118. Erysipelas in caused by:
   a. Streptococcus pyogenes
   b. Staphylococcus aureus
   c. Streptococcus epidermidis
   d. Endotoxin producing organism

Ans: A

119. A patient presented with fever, tachycardia and positive Nikolsky sign, diagnosis?
   a. Toxic epidermal necrolysis
   b. Lichen planus

Ans: A

120. Young child with fever, rash on cheeks, and honey colored crust
   a. Impetigo
   b. Cellulitis
   c. Eczema

Ans: A

121. 55-year-old male presented with high grade fever, headache, vomiting and rash, on examination he had low BP, investigation shows Low Sugar, organism responsible?
   a. Pneumococcus
   b. Staph. Aureus
   c. H. Influenza
   d. Meningococcus

Ans: D

122. A diabetic patient presents to you with ulcerating lesion in his inguinal area with discharging sinuses. you suspect actinomycosis. What is the treatment of choice?
   a. Penicillin
   b. Tetracycline
   c. Macrolides
   d. Cyclophosphamide

Ans: A

123. Which one of the following viruses is associated with nasopharyngeal carcinoma?
   a. Adenovirus
   b. Herpes simplex virus
   c. Epstein-Barr virus
   d. Picornavirus

Ans: C

124. Best treatment of malaria in psoriasis?
   a. Mefloquine
   b. Primaquine
   c. Artemether
   d. Chloroquine

Ans: C

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125. **Hemoglobinuria occurs in?**
a. Increased beetroot eating
b. Black water fever
c. Blood transfusion

Ans: B

126. **Brucella affects mainly?**
a. GIT
b. Reticuloendothelial system
c. Brain
d. Skin

Ans: B

127. **Ringworm infection is best diagnosed by?**
a. Stool for ova /cyst
b. Scotch tape test
c. Skin biopsy
d. skin scrapings with KOH

Ans: D

128. **Fungal infection is best diagnosed by?**
a. Chocolate agar
b. Wood's light
c. Skin scrapings with KOH
d. Skin biopsy

Ans: C

129. **Which one of the following is the most likely presentation of staphylococcus aureus food poisoning?**
a. Tenesmus
b. Watery diarrhea
c. Dysentery
d. Severe vomiting

Ans: D

130. **What is correct regarding leprosy?**
a. Tuberculoid is more infective than lepromatous
b. Spread by nasal droplets
c. Spread by skin contact
d. Highly infectious disease

Ans: B

131. **Heart block with circular erythematous lesions on legs?**
a. Lyme disease
b. Leptospirosis
c. Campylobacter

Ans: A

132. **Kaposi's sarcoma is caused by?**
a. HHV – 5
b. HHV – 6
c. HHV – 7
d. HHV – 8

Ans: D

133. **Which of the following parasite has primary site of localization in lymphatics?**
a. Loa Loa
b. Malaria
c. Leishmaniasis
d. Filariasis

Ans: A

134. **Organism responsible for neonatal sepsis after PROM (premature rupture of membranes)?**
a. Group A streptococci
b. Group B streptococci
c. Staph aureus
d. H. influenza

Ans: B

135. **A worker on fish farm with conjunctival hemorrhage and effusion and signs of heart failure with edema on dependent parts?**
a. Lyme disease
b. Leptospirosis
c. Rickettsia
d. Mycoplasma

Ans: B

136. **A patient presented to you in OPD with extensive bilateral lower leg edema, he also had inguinal lymphadenopathy. he returned from a foreign country about a week ago what will be the cause?**
a. Wuchereria bancrofti
b. Loa loa
c. Onchocerca volvulus

Ans: A

137. **Pig meat consumption, associated with**
a. Diphyllobothrium latum
b. Echinococcus granulosus
c. Taenia solium

Ans: C

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138. Patient presented with high grade fever, on examination systolic blood pressure is less than 90 mmHg, there is diffuse
139. erythematous lesions on abdomen and trunk, diagnosis?
    a. Anaphylactic shock
    b. Scalded skin syndrome
    c. Toxic shock syndrome

Ans: C

140. Longest incubation period is?
    a. Measles
    b. mumps
    c. HIV
    d. chicken pox

Ans: C

141. Shortest incubation period
    a. Pertussis
    b. Diphtheria
    c. Measles
    d. Chicken pox.

Ans: B

Radiant Notes

Incubation periods

Less than 1 week (Mnemonic—MIDS)	○ Meningocoocus ○ Influenza ○ Diphtheria ○ Scarlet fever
1-2 weeks (Most common presenting fever diseases in OPD)	○ Malaria ○ Dengue ○ Typhoid ○ Measles
2-3 weeks (MMR---replace the measles with chicken pox)	○ Mumps ○ Chickenpox ○ Rubella
Longer than 3 weeks (3 words---HIV)	○ HIV ○ Infectious mononucleosis ○ Viral hepatitis ○ CMV (Cee-3 words)

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Chapter: 10 Dermatology

1. A female presents to you in dermatology OPD. She has developed symmetrical erythematous lesions with an orange peel texture over both shins. what is your most probable diagnosis?

a. Pretibial myxedema
b. Erythema nodosum
c. Pyoderma gangrenosum
d. None of the above

Ans: A

2. Which one of the following conditions has strong association with erythema multiforme?

a. TB
b. Herpes simplex virus
c. Crohn's disease
d. Sarcoidosis

Ans: B

3. A middle-aged man presents to you in dermatology clinic for keloid excision. keloids are mostly formed in our body at which site?

a. Abdomen
b. Lower back
c. Limbs
d. Sternum

Ans: D

4. A 62-year-old female is referred to dermatology due to a lesion over her shin. It initially started as a small red papule which later became a deep. Red necrotic ulcer with a violaceous border. What is the likely diagnosis?

a. Necrobiosis lipoidica diabeticorum
b. Syphilis
c. Erythema nodosum
d. Pyoderma gangrenosum

Ans: D

5. A 11-year-old boy having some neurological disorder presents to you in dermatology clinic. he has complained of newly growing short hairs with tapered end, broken short terminal hairs. what is the most likely diagnosis?

a. Alopecia areata
b. Trichotillomania
c. Seborrheic dermatitis

Ans: B

6. A 64-year-old patient is referred to dermatology outpatients due to a rash. A diagnosis necrolytic migratory erythema is made. What is the most likely underlying diagnosis?

a. Lung cancer
b. Glucagonoma
c. Gastrinoma
d. Pancreatic cancer

Ans: B

7. An 18-year-old female is reviewed in the dermatology clinic complaining of scalp hair loss. Which one of the following conditions is least likely to be responsible?

a. Porphyria cutanea tarda
b. Discoid lupus
c. Tinea capitis
d. Alopecia areata

Ans: A

8. Patient in dermatology clinic presents with photosensitive rash with blistering skin lesion and hyperpigmentation, you noticed increased hair growth as well, diagnosis?

a. Hypertrichosis lanuginose
b. Hypertrichosis terminalis
c. Porphyria cutanea tarda

Ans: C

9. A 55-year-old female is referred to dermatology due to a lesion over both shins. On examination symmetrical erythematous lesions are found with an orange peel texture. What is the likely diagnosis?

a. Pretibial myxedema
b. Pyoderma gangrenosum
c. Necrobiosis lipoidica diabeticorum
d. Erythema nodosum

Ans: A

10. Which of the following skin disorder is least associated with tuberculosis?

a. Erythema nodosum
b. Lupus vulgaris
c. Lupus pernio
d. Scrofuloderma

Ans: C

11. A young female presents to you in clinic with complain of hair loss from scalp. Which condition is least likely to be responsible?

a. Discoid lupus
b. Tinea capitis
c. Alopecia areata
d. Porphyria cutanea tarda

Ans: D

12. A girl with a patch of hair loss, but no redness. her brother is atopic

a. Alopecia areata
b. Discoid lupus
c. Tinea capitis

Ans: A

13. Which one of the following conditions is least associated with pruritus?

a. Pemphigus vulgaris
b. Iron-deficiency anemia
c. Polycythaemia
d. Chronic renal failure

Ans: A

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14. Middle age lady presented an erythematous scaly plaque on face from 4 months, also she has erythematous scaly crusted plaque on trunk. Lab shows Hb 9mg%, TLC 3600/cm, platelets 95000/cm. and she is feeling unwell and lethargic when the day progress. The most likely diagnosis.

a. IgA pemphigus
b. Pemphigus folacious
c. Pemphigus erythematosis
d. Steroid induced muscle myopathy
e. SLE

Ans: **C**

15. A young female presented to you with bullous lesions on trunk with multiple erosions in oral cavity. her baseline investigations were within normal range what is your diagnosis?

a. SLE
b. IgA pemphigus
c. Steroid induced myopathy
d. Pemphigus folacious

Ans: **B**

16. Tzanck smear is positive in

a. Epidermolyosa bullosa
b. Pemphigus
c. Pemphigoid
d. IgA disease

Ans: **B**

17. Tzanck smear result is used for diagnosis of

a. IgA disease
b. Epidermolysis bullosa
c. *Herpetic lesions*

Ans: **C**

18. Most itchy lesion among the following:

a. Pemphigus
b. Pemphigoid
c. Epidermolyosa bullosa
d. Liner *IgA disease*
e. Dermatitis herpetiformis

Ans: **B**

19. The most common chronic blistering disorder of skin is:

a. Epidermolysis bullosa
b. Bullous SLE
c. Pemphigus
d. Bullous pemphigoid
e. Dermatitis herpetiformis

Ans: **D**

20. A patient presented with blistering skin lesions and oral lesions, Nikolsky positive diagnosis?

a. Pemphigus vulgaris
b. Bullous pemphigoid

Ans: **A**

✓ Blisters/bullae
✓ • no mucosal involvement bulbous pemphigoid
✓ • mucosal involvement' pemphigus vulgaris

21. A patient presented with fever, tachycardia and positive Nikolsky sign, diagnosis?

a. Toxic epidermal necrolysis
b. Lichen planus

Ans: **A**

22. A 26-year-old newly qualified nurse presents as she has developed a bilateral erythematous rash on both hands. A diagnosis of contact dermatitis is suspected. What is the most suitable test to identify the underlying cause?

a. Radioallergo sorbent test (RAST)
b. Skin patch test
c. Skin prick test

Ans: **B**

23. A 25-year-old man presents with a pruritic skin rash. The pruritus is described as 'intense' and has resulted in him having trouble sleeping. On inspecting the skin, you notice a combination of papules and vesicles on his buttocks and the extensor aspect of the knees and elbows. What is the most likely diagnosis?

a. Lichen planus
b. Chronic plaque psoriasis
c. Henoch-Schoenlein purpura
d. Dermatitis herpetiformis

Ans: **D**

24. A 50-year-old female presents to you in dermatology OPD with itchy. polygonal papules on flexor aspects of forearm. some papules coalesced to form plaques. what is your diagnosis?

a. Lichen sclerosus
b. Lichen planus
c. Scabies
d. Psoriasis

Ans: **B**

25. Violaceous rash plus Hep C, diagnosis?

a. Lichen planus
b. Lichen sclerosus
c. Granuloma annulare

Ans: **A**

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26. A 45- year-old man develops itchy, polygonal violaceous papules on the flexor aspect of his forearms. Some of these papules have coalesced to form plaques. What is the most likely diagnosis?

a. Lichen planus
b. Scabies
c. Lichen sclerosis
d. Psoriasis

Ans: **A**

---

27. A patient presents to you in dermatology clinic with widespread lesions on extensor surface and lower back with white superficial scales. what is your diagnosis?

a. Tinea capitis
b. Eczema
c. Psoriasis

Ans: **C**

---

28. A 20-year-old female presents with plaques at her scalp margins and on her knees. On examination there is evidence of hyperkeratotic plaques. What is the most likely diagnosis?

a. Pityriasis Rosea
b. Seborrheic dermatitis
c. Psoriasis
d. Tinea capitis
e. Eczema

Ans: **C**

---

29. Which of the following complication is associated with PUVA (psoralen and UVA light) therapy?

a. Dermoid cyst
b. Malignant melanoma
c. Basal cell cancer
d. Squamous cell cancer

Ans: **B**

---

30. A 39-year-old female has a pigmented mole removed from her leg which histology shows to be a malignant melanoma. What is the single most important prognostic marker?

a. Diameter of melanoma
b. Depth of melanoma
c. Number of episodes of sunburn before the age of 18years
d. Age of patient

Ans: **B**

---

31. A patient with basal cell Carcinoma, sebaceous lesion, actinic keratosis, which is the associated malignancy

a. Colon
b. Melanoma
c. Breast
d. Ovary

Ans: **B**

---

32. Breslow depth of melanoma 8mm , which was excised during biopsy nest step :

a. Observe
b. Lymph node sentinel

Ans: **B**

---

33. What is feature of Squamous Cell Carcinoma?

a. Brown black discolouration
b. Very poor prognosis
c. It is unusual but can metastasise via the lymphatics
d. Commonly metastasises to distant sites via venous spread
e. Breslow thickness related to prognosis

Ans: **D**

---

34. A 22-year-old woman presents due to hypopigmented skin lesions on her chest and back. the lesions are slightly scaly. what is the most likely diagnosis?

a. Tinea corporis
b. Pityriasis versicolor
c. Porphyria cutanea tarda
d. Lyme disease

Ans: **B**

---

35. A patient having red. Pruritic plaques with scales on trunks along rib- line, diagnosis?

a. Lichen planus
b. Guttate psoriasis
c. Pityriasis rosea
d. Pityriasis versicolor

Ans: **C**

---

36. Polymorphic erupted lesions on skin with nocturnal itching by family members history positive?

a. Pediculosis
b. Scabies
c. Dermatitis herpetiformis

Ans: **B**

---

37. A 40-year-old man complains of widespread pruritus for the past two weeks. The itching is particularly bad at night. On examination he has noted to have a number of linear erythematous lesions in between his fingers. What is the most likely diagnosis?

a. Polyurethane dermatitis
b. Fiberglass exposure
c. Cimex lectular us infestation (Bed-bugs)
d. Scabies

Ans: **D**

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38. Characteristics of scabies?

a. Burrows interdigital spaces
b. Pustules

Ans: **A**

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39. **Hyperuricemia is the early feature of:**
    a. Thiazide diuretics
    b. Spironolactone
    c. Psoriasis
    d. Rifampicin

Ans: **C**

---

40. **Photosensitive rash on dorsum of hands and face, how to diagnose?**
    a. Urine Uroporphyrinogen
    b. Aminolaevulinic acid

Ans: **A**

---

41. **A person with hypertension and tachycardia presented with recurrent attacks of abdominal pain and perfectly normal in between attacks, all workup normal, test to do?**
    a. Urinary porphobilinogen
    b. Urinary proteins
    c. Nuclear Acid Amplification Tests

Ans: A

42. **A 20-year-old college student with acute urticaria. primary treatment.**
    a. Antihistamines
    b. Steroids
    c. Adrenaline
    d. H2 blocker

Ans: **A**

---

43. **Most common cause of urticaria is:**
    a. Contact
    b. Food
    c. Penicillin
    d. Insect bite

Ans: **B**

---

44. **A 6-week pregnant female presented to dermatology OPD with chronic urticarial, which one of the following is safe in pregnancy?**
    a. Diphenhydramine
    b. Hydrazine
    c. Fexofenadine
    d. Promethazine

Ans: **A**

---

45. **A patient was started on phenytoin developed a life threating skin disorder; the disease is called?**
    a. Erythema multiforme
    b. Dermatitis herpetiformis
    c. Toxic epidermal necrolysis (TEN)
    d. Pyoderma gangrenosum

Ans: **C**

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General

Chapter: 11 General

1. **Which of the following is the most common change in retina secondary to uncontrolled HTN?**
   a. Cotton wool spots
   b. Retinitis obliterans
   c. Optic atrophy
   d. Foveal blindness

Ans: A

2. **A 65 years old normoglycemic normotensive patient presents to your clinic for annual check-up. On examination his B.P was 160/90 mmHg. He told you that his B.P recorded at some health insurance screening about 3 days back, was also high. He denies headache shortness of breath or chest pain. He has no other significant medical problems. You planned to start antihypertensive medicine to this pt. What will be your 1st line therapy?**
   a. Diuretics
   b. ACE inhibitors
   c. CCB
   d. ARBs
   e. Beta blockers

Ans: C

3. **A 74-year-old man presents for a medication review. Blood pressure is recorded as 184/72 mmHg this is confirmed on two further occasions. What is the most appropriate first line therapy?**
   a. Ramipril
   b. Losartan
   c. Amlodipine
   d. Bendroflumethiazide

Ans: C

4. **A patient who is diagnosed case of CCF present to you with pain in his hand. He is taking beta blocker, antiplatelet and diuretics. Which drug is responsible for his complaint?**
   a. Carvedilol
   b. Digoxin
   c. Aspirin
   d. Furosemide
   e. Captopril

Ans: D

5. **A hypertensive patient comes to you in emergency with headache and drowsiness. His BP was 200/120, pulse =96/min, RR =16/min. he was afebrile. CT brain was done which was also normal. What do you think he might have?**
   a. Hypertensive encephalopathy
   b. Meningitis
   c. Encephalitis
   d. SAH

Ans: A

6. **Drug of choice in diabetic hypertensive patient**
   a. CCB
   b. ACE inhibitor
   c. Diuretics

Ans: B

7. **Anti HTN contraindicated in pregnancy**
   a. Methyldopa
   b. Nifedipine
   c. Captopril

Ans: C

8. **A 65 years old diabetic patient presented to OPD with high BP. On urine analysis there is microproteinuria. Which of the following antihypertensive will you give him?**
   a. Amlodipine
   b. Atenolol
   c. Enalapril
   d. Thiazide diuretic

Ans: C

9. **A 45-year-old patient came to ER with BP of 180/120. On fundoscopy there are cotton wool spots, retinal hemorrhage and papilledema. What's the diagnosis?**
   a. Hypertensive urgency
   b. Hypertensive emergency

Ans: B

10. **Which one of the following is underlying pathology of pre-eclampsia?**
    a. Chronic malignant hypertension
    b. Renal failure
    c. Diabetes mellitus

Ans: A

11. **A hypertensive patient present to your clinic with dry cough most appropriate step of management is:**
    a. Chest X rays
    b. Review drugs
    c. Cough suppressants
    d. Sputum culture
    e. CT chest

Ans: B

12. **A pregnant lady, has blood pressure 150/90. which drug cannot be given to her?**
    a. Methyldopa
    b. Enalapril
    c. Beta bolckers

Ans: B

13. **A patient taking ACE inhibitors, verapamil and furosemide. now bilateral pedal edema. Labs showed K+ 6.3 which drug is responsible?**
    a. ACE inhibitors
    b. Verapamil
    c. Furosemide

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Ans: A

14. HTN patient started on some antihypertensive drug have low sodium. Likely drug causing hyponatremia
   a. Hydrochlorothiazide
   b. ACE Inhibitors
   c. Amiloride

Ans: A

15. A diabetic patient who had angioedema recently now becomes hypertensive drug of choice
   a. Losartan
   b. Metoprolol
   c. Captopril

Ans: A

16. Patient presented with headache, on examination BP 230/130, papilledema, while chest clear, treatment?
   a. IV labetalol
   b. IV nitroprusside
   c. IV hydralazine

Ans: A

17. A patient with basilar stroke and LVH, kidneys small, renal arterioles are narrow with intimal thickening, while renal cortex is spared?
   a. Diabetes
   b. Essential HTN
   c. Malignant HTN

Ans: C

18. An old hypertensive diabetic male admitted in ER with BP 80/60 mmHg, fever and foot gangrene. his LFTs report was also abnormal PCWP was decreased with increase lactate levels. what is your diagnosis?
   a. Neurogenic shock
   b. Diabetic foot
   c. Anaphylactic shock
   d. Septic shock

Ans: D

19. Difference b/w Anaphylactic and hypovolemic shock is?
   a. CO
   b. vasoconstriction
   c. Peripheral resistance
   d. Increase urine output

Ans: A

20. Vasodilatation and hypotension are features of which type of shock?
   a. Vasovagal
   b. Carcinogenic
   c. Septic
   d. Hypovolemic
   e. Cardiogenic

Ans: C

21. A patient has a Blood Pressure of 70/40 mmHg. Cardiac output is 2L/min & CVP is 2cms of water. Most likely cause of this condition is?
   a. Cardiac Tamponade
   b. CCF
   c. Hypovolemic Shock
   d. Pulmonary Embolism
   e. Septic shock

Ans: C

22. What is the treatment of choice in a patient with anaphylactic shock?
   a. Atropine
   b. Adrenaline
   c. Hydrocortisone
   d. Chlorpheniramine

Ans: B

23. A patient after gating tetanus toxoid injection, develops palpitations, shortness of breath and SPo2 of 70%. treatment?
   a. Iv Hydrocortisone
   b. Iv Chlorpheniramine
   c. Iv Adrenaline
   d. IV Dobutamine

Ans: C

24. Young girl 18 years old was sting by wasp 4 hours ago, on examination he is hypotensive, with edema of lips, face and hands. Appropriate diagnosis is
   a. Anaphylactic reaction
   b. Anaphylactoid reaction
   c. Direct toxin injury
   d. Angioedema
   e. Drug reaction

Ans: A

25. A young patient presents to you in accident and emergency department with marked flushing of face and body. Best drug to be given is:
   a. Noradrenaline
   b. IM adrenaline
   c. O2 inhalation
   d. Diuretics
   e. Hydrocortisone

Ans: B

26. Pt with severe respiratory distress, sore throat & fever, he was given IV benzylpenicillin and developed distress, rash & hypotension, management?
   a. IV Adrenaline
   b. IV Corticosteroids
   c. IV Antihistamine
   d. IV Fluid

Ans: A

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27. A 52-year-old male was admitted with altered mental status. His BP was 85/50 with cold peripheries and reduced urine output. His PWCP was raised. Which is the best treatment for him?
    a. Dopamine
    b. Dobutamine
    c. Norepinephrine
    d. Colloid solution

Ans: B

28. In case of septic shock which of the following will improve prognosis?
    a. Aggressive fluid resuscitation
    b. CVP monitoring
    c. Dopamine

Ans: A

29. A young girl developed syncope whole giving blood to someone, phlebotomist noticed that she was pale. Her cousin told that she had similar episode about 5 year back. Her all labs (ECG, echo) were normal what to do next
    a. IV Fluids
    b. IV antibiotics
    c. Assurance
    d. Adrenaline
    e.

Ans: C

30. Diabetic Patient presented with confusion, hypotension, & Black toe, labs showed TLC count 15000, Bilirubin 6.6, AST 1000, Cr 3.4, diagnosis?
    a. Septicaemia with shock
    b. Anaphylactic shock
    c. Cardiogenic shock
    d. Neurogenic shock

Ans: A

31. Patient has History of electric shock 2 years back on left side. Now presented with cyanosis on affected side after exposure to cold?
    a. Arterial insufficiency
    b. Raynaud's phenomenon
    c. Reflex sympathetic dystrophy
    d. Brachial plexus dystrophy

Ans: C

32. Which of the following is type IV hypersensitivity reaction?
    a. Bullions pemphigoid
    b. SLE
    c. PPD>15 after 70 hours
    d. Autoimmune hemolytic anemia

Ans: C

33. Mantoux test is an example of which type of hypersensitivity?
    a. I
    b. II
    c. III
    d. IV

Ans: D

34. Which of the following is not used in treatment of type III hypersensitivity reactions?
    a. Steroids
    b. Anti-histamines
    c. Cyclophosphamide
    d. Cyclosporine

Ans: B

35. Type of hypersensitivity reaction in post streptococcal glomerulonephritis?
    a. Type I
    b. Type II
    c. Type III
    d. Type IV

Ans: C

36. Myasthenia gravis shows which type of hypersensitivity?
    a. Type I
    b. Type II
    c. Type III
    d. Type IV

Ans: B

37. A boy presents with urticaria, rhinitis, eczematous rash on extensor surface. The underlying pathology is
    a. Type 1 hypersensitivity
    b. Type II hypersensitivity
    c. Type III hypersensitivity
    d. Type IV hypersensitivity

Ans: A

38. A young female of child bearing age having one child of 9 months old comes to you regarding rubella vaccination. What will you advise?
    a. Vaccinate her 9 months old child
    b. Should be vaccinated now
    c. Vaccinate during first trimester of pregnancy
    d. No need of vaccination.

Ans: B

39. Which of these a contraindication to receive rubella vaccination
    a. Infant less than one year
    b. Pregnant women
    c. All adults

Ans: B

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General

40. Regarding tetanus toxoid, which of the following is true?
a. Is an example of live attenuated vaccine
b. Given orally
c. Provides passive immunity
d. Provides active immunity

Ans: D

41. A forest guard bitten by dog. He already got Rabies vaccine whose serum level is more than 5ng. Best management:
a. Wound cleaning and antibiotics
b. Active and passive immunization
c. Three doses of vaccine + rabies immunoglobins
d. Two doses of vaccine at day 0 and 3

Ans: D

42. Rabies vaccination & Immunoglobulin first dose provide how much protection?
a. 100%
b. 90%
c. 70%
d. 50%

Ans: A

43. A patient is presented in emergency department after a dog bite. he was given rabies immunoglobin, what will be the schedule of his vaccine?
a. O, 7, 14, 21 days
b. 0, 3, 7, 14, 21 days
c. 5, 7, 14, 28 days
d. 5, 6, 14, 21 days
e. 0, 3, 7, 14, 28 days

Ans: E

44. Which one of the following vaccines should not be given to HIV patient?
a. Hepatitis B
b. MMR
c. Cholera
d. Yellow fever

Ans: D (Live vaccines contraindicated includes BCG, OPV, MMR, Yellow fever.)

45. BCG scar when to develop
a. 6-8 weeks
b. 8-12 weeks
c. 2-3 weeks

Ans: A

46. Pneumococcal vaccine is?
a. capsulated antigen
b. DNA vaccine
c. Toxoid
d. Cellular fraction

Ans: A

47. Patient with snake bite
a. Transfer him to hospital which was at 30 minutes distance
b. Apply tourniquet to affected limb
c. Ice sponging

Ans: A (read the theory of snake bite in TOACS section for next few questions)

48. Snake bite related where patient has developed limb swelling and purpura, how will you treat him?
a. Give IV antibiotics
b. FFPs
c. Anti-snake venom.

Ans: C

49. Snake bite, what to check?
a. PT
b. aPTT
c. FDP

Ans: A

50. Case of snake bite, now pulse is diminished + raised INR
a. FFP + Fasciotomy
b. FFP's
c. Platelet transfusion
d. Antibiotics

Ans: A

51. In snake bite, which is the test for bleeding?
a. APTT
b. PT
c. Bleeding time
d. FDPs

Ans: B

52. Patient presented to ER who had hx of snake bite he was given anti venom but he developed bilateral leg swelling ultrasound Doppler showed sluggish blood flow what is most appropriate management?
a. FFP
b. FFTs with fasciotomy
c. Platelets transfusion
d. Antibiotics

Ans: B

53. A patient bitten by snake got neurological signs and symptoms, type of snake?
a. Elapid
b. Viper
c. Cobra
d. Sea snake

Ans: C

54. Patient bitten by snake. Then develops swelling and bleeding at the site of wound and then coma and death. Snake could be?
a. Cobra
b. Common krait
c. Green snake
d. Green pit viper
e. Black mamba

Ans: D

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55. Patient bitten by a snake presented to ER with hematuria, gum bleeding and then developed coma and death what will be the cause of death in this patient?

a. Renal failure
b. Intracranial bleeding
c. Respiratory muscle paralysis

Ans: **B**

56. A patient was bitten by snake, the hospital is at 30 minutes location, immediate step?

a. Tight Tourniquet
b. Polyvalent Antitoxin
c. Reach Hospital
d. Incision at site to release venom

Ans: **C**

57. Patient of scorpion bite, BP 60/40, Carotid not palpable, what to do?

a. IV hydrocortisone
b. IV antibiotics
c. Basic Life Support

Ans: **C**

58. A diabetic female is bitten on the thigh. Pus from the wound contain Pasteurella multocida It is the case of?

a. Human bite
b. Dog bite
c. Rat bite

Ans: **B**

59. Black widow spider bite, muscle weakness developed. Treatment?

a. Calcium gluconate
b. Diazepam
c. Antibiotics
d. FFP's

Ans: **B**

60. A student was bitten by black widow spider on arm. he was complaining of pain fever, burning sensation, nausea and vomiting what to do next?

a. I/M anti-venom
b. Penicillin
c. Diazepam
d. Calcium gluconate

Ans: **C**

61. A farmer presented to you in emergency in Altered level of consciousness. After examining him, you strongly suspect organophosphate poisoning. what antidote you use?

a. Atropine
b. Pralidoxime
c. Glucagon
d. EDTA

Ans: **A** (remember atropine > pralidoxime)

62. An old female develops agitation and psychosis after atropine injection. what will be antidote?

a. Haloperidol
b. Diazepam
c. Phenobarbital
d. Physostigmine

Ans: **D**

63. A 20 years old female comes to emergency department 6 hours after accidental ingestion of pesticide. Best drug to be given is:

a. Neostigmine
b. Atropine
c. Pralidoxime
d. Edrophonium
e. Succinylcholine

Ans: **B** (For details read TOACs section)

64. A scenario of pesticide poisoning, antidote:

a. Pralidoxime
b. Glucagon
c. Atropine
d. Dimercaprol

Ans: **C**

65. Dimercaprol is an antidote of all except?

a. Mercury
b. Arsenic
c. Lead
d. Cyanide

Ans: **D**

66. In salicylate poisoning, if salicylate level is above 100mg/dl, what is the next step?

a. Activated charcoal
b. Dialysis
c. Alkalinization of urine
d. Intubation

Ans: **A** (For details read TOACs section)

67. A patient presented to ER as a case of salicylate poisoning. Which of the following feature is an urgent indication for hemodialysis?

a. Salicylate level > 500mg/L
b. Acute renal failure
c. Metabolic acidosis
d. Hematuria

Ans: **B**

68. Patient with salicylate poisoning, salicylate level 55mg/dL, what will you do next?

a. Urinary alkalinization
b. Activated charcoal
c. Dialysis

Ans: **B**

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General

69. Patient presented in Emergency after being caught in a bush fire. He presented with pinkish peripheries. Treatment?
 a. Give 100% oxygen
 b. Warm blankets
 c. IV fluids

Ans: **A**

70. All of the following are true regarding carbon monoxide poisoning except?
 a. Pink skin and mucosa indicate severe poisoning
 b. Extrapyramidal features
 c. Hypothermia
 d. Treated with 100% oxygen

Ans: **C**

71. What is true regarding Co poisoning?
 a. High flow 02 reduces half-life of CO
 b. Levels >40% causes Altered sense of consciousness

Ans: **A**

72. A patient came to ER with high BP, treated with IV nitroprusside. House officer take blood of the patient which was brown chocolate coloured. What could be the cause of this
 a. Thiocyanate poisoning
 b. Methemoglobinemia
 c. Carbon monoxide poisoning
 d. Respiratory failure

Ans: **B**

73. A patient developed psychiatric disturbance, hallucination, dilated pupil and is tachycardiac. Which poisoning?
 a. Benzodiazepine withdrawal
 b. Dexamphetamine
 c. Beta blockers
 d. Ergotamine

Ans: **B**

74. A 25-year-old unmarried girl comes to you in emergency department with altered state of consciousness 48 hours after investigation of paracetamol tablets. What is the best prognostic indicators?
 a. Serum albumin
 b. Serum ALT levels
 c. PT
 d. APTT
 e. Serum ammonia

Ans: **C**

75. Treatment of paracetamol poisoning
 a. Flumazenil
 b. N acetylcysteine
 c. Naloxone

Ans: **B**

76. A patient presented with paracetamol overdose, which one of the following is most sensitive lab evidence for liver damage?
 a. APTT
 b. AST
 c. ALT
 d. PT/INR

Ans: **D**

77. A young patient presented after taking some drugs presented with unconsciousness, there were empty drug boxes besides, her liver enzymes are normal, paracetamol levels are 55 grams, treatment?
 a. Activated charcoal
 b. Alkalinization of urine
 c. N-acetylcysteine

Ans: **C**

78. A young girl developed fits, on examination she was tachycardiac having pulse 140 /min, and there was a mass below the umbilicus. Diagnosis?
 a. TCA poisoning
 b. CVA
 c. Brain tumor

Ans: **A**

79. A medical student was brought to ER, who is agitated and talkative with speedy speech 2 days before his exam, what is true regarding this case?
 a. Sênd urine drug level
 b. Amphetamine toxicity
 c. Organophosphate poisoning

Ans: **B**

80. A patient presented to ER with altered consciousness. examination shows dilated pupils and garlic smell coming from his mouth. which of the following is true regarding this patient?
 a. Benzodiazepines poisoning
 b. Organophosphate poisoning
 c. Wheat pill poisoning

Ans: **C**

81. In severe methanol poisoning, the most useful modality is?
 a. Ethanol
 b. Fomepizole
 c. Hemodialysis
 d. Activated charcoal

Ans: **C**

82. A patient is brought to the emergency department in deeply comatose state. he has pinpoint pupils shallow breathing. drug responsible is:
 a. Morphine
 b. Benzodiazepines
 c. Salicylates

Ans: **A**

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83. After a recurrent but severe conflict with parents, and 18-year-old boy comes to emergency department with complain of severe headache and vomiting. His BP and temperature are normal. Fundus examination was normal. What is the most appropriate next step?

a. CT brain
b. Toxicology screen
c. Angiography
d. LP
e. Psychological evaluation

Ans: **B**

84. Long term use of OCP will have the following side effects:

a. Breast CA
b. Endometrial CA
c. Increased risk of thromboembolism

Ans: **C**

85. An old man is prescribed hydrochlorothiazide for HTN. which of the following is the most like side effect of this drug?

a. Sexual impotence
b. Metabolic acidosis
c. Inc serum k+
d. Respiratory alkalosis

Ans: **A**

86. Side effects of phenytoin?

a. Tremors
b. Iron deficiency anemia
c. hypertrichosis

Ans: **C**

87. A female patient presents to you in OPD with complain of increased hair growth she is a diagnosed case of RA and epilepsy. which one of the following drugs is responsible for this?

a. Steroid
b. Valproate
c. Phenytoin
d. Methotrexate

Ans: **C**

88. The most common side effect of tricyclics?

a. Weight loss
b. Diarrhea
c. Anticholinergic side effect

Ans: **C**

89. Which of the following is long term side effect of heparin?

a. Osteoporosis
b. HIT
c. Osteonecrosis of jaw
d. Dementia

Ans: **A**

90. A smuggler with swallowed drug- surgery indication?

a. He refuses to take laxative
b. Drug ruptures inside body

Ans: **B**

91. Gynecomastia is caused by which of the following drugs?

a. Aspirin
b. Digoxin
c. Paracetamol

Ans: **B**

92. Adverse effect of ticlopidine

a. Neutrophilia
b. Neutropenia
c. Leucopenia
d. Leucocytosis

Ans: **B**

93. Patient took antibiotic for fever after which CBC shows pancytopenia what is the name of drug which has caused pancytopenia?

a. Ciprofloxacin
b. Metronidazole
c. Levofloxacin
d. Cotrimoxazole
e. Chloramphenicol

Ans: **E**

94. A 65-year-old female with a 30 years old female with a 30 years history of RA is noted to have proteinuria on annual review. which one of the following drugs is most associated with the development of proteinuria?

a. Cyclosporin
b. Azathioprine
c. Sodium aurothiomalate
d. MTX
e. Infliximab

Ans: **C**

95. 58 years old patient, whose PCV was 23%, was using some drug for Atrial fibrillation and urine R/E showed RBCs. Cause of hematuria?

a. Quinidine
b. Procainamide
c. Propranolol.

Ans: **A**

96. Young girl is a taking a medicine for kidney problem. The drug has caused cosmetic disfigurement to the patient. What is the drug

a. Prednisolone
b. Cyclophosphamide
c. Rituximab

Ans: **B**

97. The Side effect of ribavirin toxicity is?

a. Thrombocytopenia
b. Leukopenia
c. Hemolytic anemia

Ans: **C**

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98. Side effect of steroid after long term use?
a. Osteonecrosis
b. Osteolytic lesions
c. Osteoporotic fracture
Ans: C

99. A patient reporting of Myopathy. Drug responsible?
a. Beta blockers
b. Anti-platelets
c. Statins
d. NSAID's
Ans: C

100. Drug that causes muscle weakness and pain?
a. Simvastatin
b. ACE Inhibitors
c. Calcium channel blockers
d. Methotrexate
Ans: A

101. Post-transplant leukopenia is caused by which of the following drugs?
a. Methotrexate
b. Azathioprine
c. Steroid
d. Cyclophosphamide
Ans: B

102. Drugs contraindicated in pregnancy are:
a. Hydralazine
b. Methyldopa
c. Lisinopril
d. Atenolol
e. Verapamil
Ans: C

103. Diabetic patient on atenolol has angina symptoms which drugs should be added for HTN and angina?
a. Diuretics
b. Ca channel blockers
c. ACE inhibitors
d. ARB's
Ans: B

104. A patient known case of hypertension presented with osteoporosis, serum ca++ 11, which drug can cause hypercalcemia?
a. Calcitonin
b. Furosemide
c. Hydrochlorothiazide
Ans: C

105. 80 years old male drug given for facial pain, now developed after 2 days ataxia, can't read and can't speak properly. Drug culprit?
a. Cyclophosphamide
b. Spironolactone
c. Carbamazepine
d. Lamotrigine
Ans: C

106. Patient on ATT develop gum bruising, drug responsible for it?
a. INH
b. PZA
c. Ethambutol
d. Rifampin
Ans: D

107. Tuberculosis patient started on ATT complaining of decreased vision, drug causing this is
a. Rifampicin
b. Streptomycin
c. Isoniazid
d. Ethambutol
e. Pyrazinamide
Ans: D

108. Patient started on ATT developed neuropathy, what to do?
a. I/M pyridoxine stat then pyridoxine 50mg OD
b. Pyridoxine 25mg OD
c. Pyridoxine 25mg twice a day
d. Stop ATT
Ans: A

109. Which one of the following ATT is responsible for neuropathy?
a. Rifampicin
b. INH
c. Ethambutol
d. Pyrazinamide
e. Streptomycin
Ans: B

110. Patient when started on ATT started to develop joint pains. Most likely due to?
a. Hyperuricemia
b. Tuberculosis of joints
c. Drug induced SLE
Ans: A

111. Streptomycin causes:
a. Vestibular damage
b. Cochlear damage
c. Vestibulocochlear damage
Ans: C

112. A known case of tuberculosis patient is on antituberculosis therapy, develops paraesthesia in limbs:
a. Pyridoxine deficiency
b. Niacin deficiency
c. B12 deficiency
d. Folic acid deficiency
e. Thiamine deficiency
Ans: A

113. Which ATT has withdrawal symptoms
a. Isoniazid
b. Rifampicin
c. Pyrazinamide
d. Ethambutol

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Ans: B

114. Tuberculosis patient started on ATT complaining of decreased vision, drug causing this is

a. Rifampicin
b. Streptomycin
c. isoniazid
d. Ethambutol
e. Pyrazinamide

Ans: D

115. An old aged female was prescribed ciprofloxacin for some infection. what are the adverse effects of ciprofloxacin in this patient?

a. Nausea and vomiting
b. Constipation
c. Diarrhea
d. Tendon and cartilage rupture

Ans: D

116. Which drug toxicity causes AV dissociation?

a. Propranolol
b. Digoxin
c. Diltiazem
d. Hydralazine

Ans: B

117. A female on anti-TB drugs using OCPs but still conceive. Which drug is responsible?

a. Isoniazid
b. Rifampicin
c. Ethambutol
d. Pyrazinamide

Ans: B

118. A patient is on ATT. He developed symptoms of hyperuricemia. The drug responsible is

a. INH
b. PZA
c. Ethambutol
d. Rifampin

Ans: B

119. Known case of rheumatoid arthritis on DMARD's, now presented with abnormal LFT's. Drug that affect liver is?

a. Methotrexate
b. Cyclophosphamide
c. Sulfasalazine
d. Busulfan

Ans: A

120. Which of following drug is absolutely contraindicated in pregnancy?

a. Nifedipine
b. Captopril
c. Methyldopa
d. Hydralazine
e. Atenolol

Ans: B

121. A patient having coronary heart disease and heart failure was started on Ramipril developed dry cough, which drug should be given now?

a. Verapamil
b. Amlodipine
c. Losartan
d. Nifedipine

Ans: C

122. A patient presented with bilateral lung crepitations; drug responsible?

a. Amiodarone
b. Beta blockers
c. ACE inhibitors
d. Angiotensin receptor blockers

Ans: A

123. A patient who is known case of HTN, Atrial fibrillation and urea is 60,cr is 3.what is drug choice to control BP?

a. Verapamil
b. Diltiazem
c. ACEI
d. Prazosin

Ans: A

124. Mechanism of action of cisplatin?

a. Causes cross linking in DNA
b. Inhibits formation of microtubules
c. Inhibits ribonucleotide reductase
d. Stabilization of DNA topoisomerase

Ans: A

125. Which one of the following cytotoxic agents work by inhibiting dihydrofolate reductase and thymidylate synthetase?

a. Vincristine
b. Bleomycin
c. Methotrexate
d. Cyclophosphamide

Ans: C

126. Which one of the following is responsible for ototoxicity?

a. Vincristine
b. Bleomycin
c. Busulfan
d. Cisplatin

Ans: D

127. A patient was started on cyclophosphamide, which one of the following is most likely side effect?

a. Hirsutism
b. Gingival hyperplasia
c. Weight gain
d. Hemorrhagic cystitis

Ans: D

General

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128. **Which one of the following cytotoxic agents is associated with peripheral neuropathy?**
    a. Vincristine
    b. Doxorubicin
    c. Carboplatin
    d. Cyclophosphamide

Ans: **A**

129. **Cocaine withdrawal has the following features?**
    a. Auditory hallucinations
    b. Olfactory hallucinations
    c. Tactile hallucinations.

Ans: **C**

130. **Agent which works to inactivate the toxic metabolite of toxin?**
    a. Atropine
    b. Ethanol
    c. Naloxone
    d. N-acetylcysteine

Ans: **D**

131. **All drugs will cause pulmonary fibrosis except**
    a. Methyldopa
    b. Amiodarone
    c. Bleomycin
    d. Methotrexate

Ans: **A**

132. **Which of the following antibiotics can cause pulmonary fibrosis?**
    a. Co amoxiclav
    b. Co trimoxazole
    c. Erythromycin
    d. Norfloxacin
    e. Ofloxacin

Ans: **B**

133. **A young boy is born with a heart murmur that is subsequently diagnosed as Ebstein's anomaly. which of the following drugs, taken by mother, may have contributed to this case of congenital heart disease?**
    a. Amiodarone
    b. Carbimazole
    c. Lithium
    d. Phenytoin
    e. Warfarin

Ans: **C**

134. **Side effect of mesalazine?**
    a. Interstitial nephritis
    b. Acute pancreatitis
    c. Agranulocytosis
    d. Infertility

Ans: **D**

135. **Side effects of sulfasalazine are all except?**
    a. Reversible oligospermia
    b. Hepatitis C
    c. Pancreatitis
    d. Paradoxical wording of colitis
    e. Hypothermia

Ans: **E**

136. **Most well documented side effect of Busulphan?**
    a. Renal toxicity
    b. Pulmonary fibrosis
    c. Hepatic failure
    d. Pulmonary fibrosis
    e. Thyroid dysfunction

Ans: **B**

137. **The most common side effect of loop diuretics is**
    a. Hypokalemia
    b. Hyponatremia
    c. Hypocalcemia

Ans: **A**

138. **Which of the following is the commonest side effect of furosemide?**
    a. Hypokalemia
    b. Hyponatremia
    c. Hypocalcemia
    d. Hypomagnesaemia

Ans: **A**

139. **A 55-year-old female, known case of congestive heart failure, develops pain in small joints of her hands. What is the likely culprit drug?**
    a. Captopril
    b. Aspirin Furosemide
    c. Digoxin

Ans: **C**

140. **Following is most likely side effect of thiazide diuretics**
    a. Increased Serum potassium
    b. Metabolic acidosis
    c. Impotence
    d. Respiratory Alkalosis

Ans: **C**

141. **All are side effects of erythropoietin except?**
    a. Bone aches
    b. Hypertension
    c. Pure red call aplasia
    d. Long bone fractures

Ans: **D**

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142. **A patient was started on cyclophosphamide, which one of the following is most likely side effect?**
   a. Hirsutism
   b. Gingival hyperplasia
   c. Weight gain
   d. Hemorrhagic cystitis

Ans: D

143. **Which of the following factors will predispose her to azathioprine toxicity?**
   a. Cimetidine
   b. Rifampicin
   c. Fast acetylator status
   d. Thiopurine methyltransferase deficiency

Ans: D

144. **All drugs can cause hemolytic anemia except:**
   a. Penicillin
   b. Quinidine
   c. Methyl dopa
   d. *Aspirin*

Ans: D

145. **A patient presented to you with intermittent claudication. pain will most likely increase with**
   a. Beta blockers
   b. Hyperthermia
   c. Hanging limb on table

Ans: A

146. **A 30 years old immunocompromised patient who is a known case of CKD develops sepsis. which of the following antibiotics if used, would require a major reduction in dose?**
   a. Erythromycin
   b. Tobramycin
   c. Doxycycline

Ans: C

147. **Which anti-arrhythmic drug works by interfering with movement of slow calcium channels?**
   a. Phenytoin
   b. Verapamil
   c. Lidocaine
   d. Amiodarone

Ans: B

148. **Bleeding from any site can occur in deficiency of?**
   a. Vit A
   b. Vit E
   c. Vit K
   d. Vit D

Ans: C

149. **Disease caused by the vitamin deficiency leading to high output cardiac failure is?.**
   a. HOCM
   b. Beri-Beri
   c. Restrictive cardiomyopathy

Ans: B

150. **An 80-year-old man presents with bleeding gums and petechial rash on thighs he used to live in a geriatric home. which disease he might have?**
   a. Vitamin C deficiency
   b. Von Willebrand disease
   c. Henoch Schonlein purpura

Ans: A

151. **Use of methotrexate leads to which deficiency?**
   a. Vitamin C deficiency
   b. Vitamin B6 deficiency
   c. Vitamin B12 deficiency
   d. Folic acid deficiency

Ans: D

152. **A syndrome of anemia, coarse hair, periosteal new bone formation with inc lipids?**
   a. Carotenemia
   b. Vitamin A deficiency
   c. Vitamin A intoxication
   d. Vitamin D deficiency
   e. Vitamin D intoxication

Ans: C

153. **An alcoholic develops loose stools with some rashes on the skin. he also complains of some memory problems. Treatment will be?**
   a. Thiamine
   b. 25% dextrose IV
   c. Vitamin B6
   d. IV hydrocortisone

Ans: A

154. **A mother of five children complaints of pain in both shoulders. What should be done next?**
   a. Ca
   b. Vitamin D levels
   c. Ca/ Po4
   d. ALP
   e. Muscle biopsy

Ans: B

155. **A lady after consuming some health benefit pills for purpose to stay young. now developed malaise. agitation, arthralgia, blurring of vision, dryness of skin and few more symptoms. what was she taking?**
   a. Vitamin A
   b. Vitamin B
   c. Calcium
   d. Fluoride

Ans: A

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156. A patient admitted as case of heart failure. Which of the following vitamin deficiency could be the cause of heart failure in this patient?
a. Vitamin B1
b. Vitamin B2
c. Vitamin K
d. Vitamin C

Ans: **A**

157. A 30-year-old female patient with Wilson's disease and is on penicillamine. Which one of the following can also be used as treatment?
a. Vitamin B1
b. Vitamin B6
c. Vitamin C
d. Vitamin D
e. Zinc

Ans: **E**

158. A young girl with history of anorexia nervosa presented to you in OPD. Complain of red crusted lesions around the corner of her mouth and below lower lip. She is deficient in;
a. Zinc
b. Selenium
c. Thiamine
d. Pantothenic acid

Ans: **A**

159. Regarding anorexia nervosa, what is most commonly seen?
a. Hypertension
b. Enlarged salivary gland
c. Reduced cortisol
d. Diarrhea

Ans: **B**

160. An active young female with history of weight loss & secondary amenorrhea. ECG showed heart rate of 60 per minute growth of hair on trunk and limbs?
a. Gonadal failure
b. Ectopic pregnancy
c. Anorexia nervosa

Ans: **C**

161. An 18-year-old thin girl diagnosed as a case of anorexia nervosa. this girl is most likely to develop?
a. Renal failure
b. Pernicious anemia
c. DM
d. HTN
e. Ventricular arrhythmia

Ans: **E**

162. Sodium content in normal saline?
a. 77 mEq/L
b. 135 mEq/ L
c. 154 mEq/L
d. 320 mEq/L

Ans: **C**

163. Sodium content in Ringer Lactate?
a. 100 mEq/L
b. 130 mEq/ L
c. 150 mEq/L
d. 170 mEq/L

Ans: **B**

164. Source rich in sodium
a. Cereals
b. Can of soup
c. Bread

Ans: **B**

165. One bag of platelets can increase the platelets count upto?
a. 1000
b. 15000-20,000
c. >20,000
d. 5000-10,000

Ans: **D**

166. 70-year-old woman with general weakness and lethargy but conscious and alert, Na 122, Urine osmolality 650 mmol/kg. Most appropriate initial therapy
a. Isotonic saline
b. Hypertonic saline
c. Ringer lactate

Ans: **A** (If term of unconscious or seizures is mentioned prefer hypertonic saline. Ref: oxford handbook of medicine page 686)

167. A patient presented with DKA, labs showed Serum sodium 124, RBS 700mg/dl, corrected sodium will be?
a. 124
b. 134
c. 144
d. 154

Ans: **B**

✓ The proposed formula was: corrected sodium = measured sodium + [1.6 (glucose – 100) / 100]

168. 8.4% sodium bicarbonate solution can be given through?
a. IV
b. NG
c. Orally
d. Cannot be administered

Ans: **A**

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169. **Most effective method of cooling in heat stroke is:**
a. Cooling blankets
b. Tepid sponging
c. Placing icepacks in axilla and groin
d. Infusion of cool iv fluids

Ans: C

170. **Patient came in ER with temperature of 105*F after working in his farm during summer season. What is the diagnosis?**
a. Sun burn
b. Heat exhaustion
c. Heat stroke
d. OP poisoning

Ans: C

171. **A patient presents with generalized weakness. Labs show low Ca, low K, and low Magnesium. his cause of weakness will be?**
a. Low Calcium
b. Low Magnesium
c. Low potassium

Ans: C

172. **Hyporeflexia starts at which Mg level?**
a. 2 mmol
b. 4 mmol
c. 6 mmol
d. 8 mmol
e. 10 mmol

Ans: A

173. **Regarding magnesium ion which of the following is true?**
a. Is required in depolarization of membrane
b. Increased in RTA type 1
c. Normal range is 0.7-0.9 mmol/l
d. Important component of anion gap

Ans: C

174. **Regarding the treatment of tumor lysis syndrome in high risk patients?**
a. Fluids are required
b. Start allopurinol before the start of treatment
c. Administer probenecid
d. Cyclic therapy is used
e. Surgery is an option

Ans: B

175. **All of the following occurs in tumor lysis syndrome except**
a. Hyperkalemia
b. Hypercalcemia
c. Hyperphosphatemia
d. Lactic acidosis
e. Increase LDH

Ans: B

176. **Regarding down syndrome**
a. Most live to adulthood
b. 70% has congenital heart disease
c. Caused by deletion of chromosome
d. Facial features and polydactyly is characteristic
e. Trisomy 22

Ans: D

177. **Adult female patient mentally retarded with blindness and polydactyly, there is also facial puffiness and hypogonadism, this syndrome is called?**
a. Kallmann syndrome
b. Lawrence moon syndrome
c. Angelman syndrome

Ans: B

178. **Banker with long history of weakness, & Fatigue, which differentiate major depression from chronic fatigue syndrome**
a. Past history of major depression
b. Response to antidepressants
c. Sleep disorder
d. Fatigue

Ans: A

179. **A patient says he has illness and wants to undergo invasive procedures while his labs are unremarkable, and there is history of multiple hospital admissions, diagnosis?**
a. Narcissistic
b. Obsessive- Compulsive disorder
c. Munchausen syndrome.

Ans: C

180.

181. **A man thinks his wife is unfaithful For 20 years. He is also a patient of depression for which he takes fluoxetine. He has suicide potential. Likely diagnosis is:**
a. Depression with psychotic features
b. Delusional disorder

Ans: A

182. **For diagnosis of Klinefelter syndrome, which test is performed?**
a. Skin biopsy
b. Buccal smear
c. Bone marrow aspirate
d. Rectal biopsy

Ans: B

183. **A 26-year-old male has height of 6.6ft and gynecomastia. what test will confirm this diagnosis?**
a. Rectal biopsy
b. Dexamethasone suppression test
c. Skin biopsy
d. Buccal smear

Ans: D

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General

184. Regarding Huntington's disease which of the following is correct?
a. Onset is in childhood
b. There is increase in telomere sequence
c. Most common cause of chorea
d. Autosomal dominant
Ans: D

185. Regarding Huntington's disease, all are true except:
a. Occurs in childhood
b. Occurs in middle age
c. Shows anticipation
d. A trinucleotide repeat disorder
Ans: A

186. Which one of the following is a Trinucleotide repeat disease with CAG gene expression?
a. Fragile X syndrome
b. Myotonic dystrophy
c. Huntington disease
Ans: C

187. Autosomal dominant disorder, choreiform movements, mood disturbances, behavioural changes, disease most likely is?
a. Phenylketonuria
b. Huntington
c. Hemiballismus
d. Sydenham chorea
Ans: B

188. Trinucleotide repeat disorders include all except:
a. Fragile X syndrome
b. Huntington disease
c. Myotonic dystrophy
d. Achondroplasia
Ans: E

189. A patient with recurrent chest infection and diarrhea, having low IgA, low IgM & low IgG, diagnosis?
a. Kartagener syndrome
b. Acquired hypogammaglobulinemia
c. IgA deficiency syndrome
d. Bronchiectasis
Ans: B

190. Which one of the following is least associated with kartagener syndrome?
a. Male subfertility
b. Dextrocardia
c. Recurrent severity
d. Malabsorption
Ans: D

191. A patient known case of Hypogammaglobulinemia having chronic diarrhea, suffering from which leukemia?
a. Acute lymphocytic leukemia
b. Acute myeloid leukemia
c. Chronic lymphocytic leukaemia
d. Acute myeloid leukemia
Ans: C

192. Patient of hypogammaglobulinemia, is associated with?
a. Mucosal atrophy
b. Subtotal villous atrophy
Ans: B

193. A patient in his last weeks of life become jaundiced. Autopsy - 3500 gm yellow greasy enlarged liver. Histopathology showed no necrosis. Likely cause of death?
a. Hemochromatosis
b. Alcoholism
c. Galactosemia
Ans: C

194. A patient presented with failure to thrive and cataracts, family history is positive for cataracts, diagnosis?
a. Galactosemia
b. Homocystinuria
c. Cystinuria
Ans: A

195. Common complication of metformin in renal failure?
a. Hypoglycemia
b. Uremia
c. Lactic acidosis
d. DKA
Ans: C

196. Cut off limit of BMI for obesity?
a. 22
b. 25
c. 28
d. 30
Ans: D

197. Obese female with BMI 41. What will be metabolic abnormality in this patient?
a. Hypertriglyceridemia
b. Hypercapnia
c. Hyperinsulinemia
Ans: A

198. Familial hypertriglyceridemia manifestation?
a. Tendon Xanthoma
b. Pancreatitis
c. Skin xanthomas
d. Hepatosplenomegaly
Ans: B

199. Familial hypercholesterolaemia manifestation?
a. Palmar xanthoma
b. Tuberous xanthoma
c. Tendon xanthoma
Ans: C

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200. 25-year-old had his cholesterol measured. This revealed very high levels of VLDL and although HDL and LDL were normal there was also an increase in the triglycerides. What is the most likely defect?
- a. Hepatic production of VLDL
- b. Decreased lipoprotein lipase
- c. Apolipoprotein C-II deficiency
- d. Defect in apo E2 synthesis

Ans: **A**

201. High level of triglycerides but normal cholesterol, cause?
- a. Lipoprotein lipase deficiency
- b. Defect in apo E2 synthesis

Ans: **A**

202. A patient presented to you in OPD with obesity and smoking, he wants investigation for cholesterol, what would you check?
- a. Triglycerides + total cholesterol + LDL+ HDL
- b. Total cholesterol +LDL + HDL
- c. VLDL + LDL + HDL

Ans: **A**

203. Which of the following is the most likely cause of protein losing enteropathy?
- a. Scleroderma.
- b. Amyloidosis.
- c. Menetriers disease.
- d. Disaccharidase deficiency.

Ans: **C**

204. Which of the following can occur in second trimester of pregnancy?
- a. Porphyria
- b. SLE
- c. Rheumatoid arthritis
- d. Autoimmune hepatitis

Ans: **B**

205. An old lady comes to you with chronic low backache. her labs show Ca and PO4 within normal limits. how to treat her?
- a. Vit- D/ CA/ bisphosphonate
- b. Bisphosphonates
- c. HRT

Ans: **B**

206. Resistant Hypokalemia despite of I/V KCL is due to?
- a. Due to Dec Ca++
- b. Dec to dec Cl
- c. Dec to Inc Mg
- d. Due to dec Mg

Ans: **D**

207. Rapid development of Hypokalemia
- a. Persistent vomiting
- b. Cushing syndrome
- c. Conn syndrome
- d. RTA

Ans: **A**

208. Hypercalcemia is caused by all except:
- a. Sarcoidosis
- b. Multiple myeloma
- c. Pancreatitis
- d. CA lung
- e. Hyperparathyroidism

Ans: **C**

209. Massive blood transfusion can cause?
- a. Leucopenia
- b. Hepatic coma
- c. Hypocalcemia
- d. Coagulation defect

Ans: **C**

210. Which of the following is considered suitable for unmatched blood transfusion?
- a. AB +ive
- b. O -ive
- c. O +ive
- d. B +ive

Ans: **B**

211. A patient needs recurrent blood transfusions ideally cross match should be done in?
- a. 1 bag only
- b. 3 bags only
- c. Every bag

Ans: **C**

212. A pregnant diabetic female having tingling in 3rd 4th 5th finger. Diagnosis?
- a. Vitamin D deficiency
- b. Carpal tunnel syndrome

Ans: **B**

213. Which of the following statements is true after alcohol ingestion?
- a. Steroids always helpful
- b. Give prophylactic antibiotics
- c. Give bicarbonate
- d. Causes coagulation necrosis

Ans: **D**

214. Migratory thrombophlebitis is associated with:
- a. Prostate carcinoma
- b. Pancreas Carcinoma
- c. Lung carcinoma
- d. Renal carcinoma

Ans: **B**

215. A lady who had colostomy was started on total parenteral nutrition (TPN). TPN included problem will be
- a. Hypoglycemia
- b. Hyperglycemia
- c. Hypocalcemia
- d. Hypercalcemia

Ans: **B**

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216. Regarding 8.5% HCO3. the following statement is true:
   a. Should always be given in asystole
   b. 5 minutes after CPR
   c. It can cause paradoxical intracellular acidosis
   d. It should not be given in TCA poisoning
   e. It reduces the plasma osmolarity

Ans: C

217. Acute limb ischemia cannot tolerate
   a. Hypothermia
   b. Pain
   c. Compression

Ans: A

218. In HCL ingestion, which agent should be used first of all?
   a. NaHCO3
   b. Steroids
   c. antibiotics
   d. Tap water

Ans: D

219. A patient presented in emergency department in a comatose state and generalized weakness. Her attendants tell you that she is already a diagnosed case of bipolar disorder and was taking medicines for it. you will order which lab test?
   a. serum Na
   b. serum K
   c. serum Ca
   d. serum PO4

Ans: A

220. What is the most common complication of allogenic bone marrow transplantation?
   a. Radiations sickness
   b. Development of leukemia
   c. Graft failure
   d. Graft versus host disease

Ans: D

221. Risk for breast cancer increase in:
   a. Multiparty
   b. Long term nursing
   c. Late first pregnancy
   d. History of breast cancer in aunt

Ans: D

222. Impotency in DM is part of:
   a. Arterial disease
   b. Venous disease
   c. Neuropathy

Ans: C

223. An old patient with IDDM and coronary artery disease is complaining of impotence, but has morning erection. What will be your next step in management?
   a. Sildenafil
   b. Antidepressants
   c. Psychiatric referral
   d. Strict glycaemic control

Ans: C

224. Which of the following result in blood gases will show that the patient is hyperventilating due to anxiety?
   a. Increased PCO2
   b. Decreased PCO2
   c. Increased O2
   d. Decreased O2

Ans: B

225. Which of the following best describes the effect of calcium ions on myocardium?
   a. Positively inotropic
   b. Negatively inotropic
   c. Positively chronotropic
   d. Negatively chronotropic

Ans: A

226. Which of the following is the reason of decreased plasma creatinine in pregnancy?
   a. Increase plasma protein
   b. increase filtration (GFR)
   c. increase hydrostatic pressure

Ans: B

227. An old male comes to you in OPD for routine medical examination. you order baselines after complete examination (normal) labs shows increase Ca what do you think is the most common cause of incidental hypercalcemia?
   a. Myeloma
   b. Hyperparathyroidism
   c. Diuretic use

Ans: B

228. If a pregnant patient is allergic to penicillin, then next best choice is:
   a. Tetracycline
   b. Doxycycline
   c. Erythromycin
   d. Chloramphenicol

Ans: C

229. The most common cause of Hyperkalemia is?
   a. Renal failure
   b. Fanconi syndrome
   c. Conn's syndrome
   d. Renal tabular acidosis
   e. Hyperfunctioning cortisol producing adrenal

Ans: A

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230. **Facioscapulohumeral dystrophy is:**
   a. X linked dominant
   b. X linked recessive
   c. Autosomal dominant
   d. Autosomal recessive
   e. Multifactorial

Ans: **C**

231. **Aspirin in low dose cause:**
   a. Hypouricemia
   b. Hyperuricemia
   c. Gout

Ans: **B** (Low dose reduces urea and uric acid excretion contributing to hyperuricemia)

232. **Difference in cardiac actions of epinephrine:**
   a. Heart rate
   b. Arrhythmias
   c. Stroke volume
   d. Cardiac output

Ans: **D**

233. **Which of the following is poor prognostic sign of near drowning?**
   a. Cold water drowning
   b. Hypothermia

Ans: **B**

234. **Young lady asks doctors to tell about her medical cause of fatigue?**
   a. Review her medical records as soon as possible

Ans: **A**

235. **A child is treated at a GP clinic. When she presented to ER, she is restless and rolling of eyes was noted on examination. What to do next**
   a. Do nothing
   b. Give prochlorpromazine
   c. Give procyclidine

Ans: **C (Not enough details in question can be oculogyric crisis)**

236. **11-month child while playing has accidental coin ingestion, now in distress, but conscious, what to do**
   a. Back blows & chest thrust
   b. Immediate CPR
   c. Abdominal thrusts

Ans: A

237. **Person has belief that he has carcinoma, previous CT scans normal he wants other CT scan as he is sure he has carcinoma, diagnosis?**
   a. Somatic symptom disorder
   b. Hypochondriasis.
   c. Conversion disorder

Ans: **B**

238. **Poor prognostic factor in schizophrenia**
   a. Family history
   b. Visual hallucination
   c. Auditory hallucination

Ans: **A**

239. **In ward a staff nurse has given IV metoclopramide, a patient develops oromandibular spasm. What is the drug of choice to treat it?**
   a. Diazepam
   b. Tizanidine
   c. Benztropine
   d. Diphenhydramine
   e. Dantrolene

Ans: **C**

240. **A psychotic patient who is on long term antipsychotics presented in Neurology OPD due to complain of sustained, stereotyped muscle spasm of a twisting character of trunk. He is diagnosed as Tardive dyskinesia. Which one of the following drug is not responsible for these symptoms?**
   a. Haloperidol
   b. Clozapine
   c. Fluphenazine
   d. Chlorpromazine

Ans: **B**

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General

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Station Examinations

Previous TOACS station and their answers given with each system

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General Physical

Examination: 1 General Physical

Common Command:

- Perform the general physical examination of this patient and describe only positive findings.
- And then question depends upon your findings

Important TIP:

- Watch YouTube videos on examination, practice as much as you can along with the timer, try to perform examination in 2 minutes---so that you can answer the examiner questions then.

<u>General Physical Examination</u>

The first & most important step	❖ **If there is a sanitizer beside patient, make sure to use that** ❖ **Be sure that you are on the right side of the patient** ❖ At the same time say **greetings, introduce yourself, take permission and explain** what you are going to do ❖ The patient legs should be exposed till knees
Observation and Appearance	❖ Before starting examination take a few moments to quickly look from head to toe—while standing at the foot side and look for o General appearance (whether he looks well, mildly ill or severely ill) o Consciousness (e.g. alert, confused, drowsy, unconscious) o Look for surrounding findings (e.g., IV canula is attached on right/Left hand, any chest tube or foleys catheter) **Example: An old ill looking man lying in the bed, of average height and built, he is fully conscious with an IV canula in left hand**
Hand	❖ **General look at the hand---remember to observe both hands at the same time and compare both of them as well** o Shape of the hand---short 4th or 5th metacarpals in pseudohypoparathyroidism o Carpal spasm in tetany o Hands are larger in acromegaly o Tremors ---ask the patient to outstretch the arms and abduct the fingers ❖ **Nails** o Look for Pale nails (Anemia, liver disease), white nails with darker rims (Hepatitis), Bluish nails (Cyanosis), Splinter haemorrhages (Infective endocarditis), Pitting of nails (Psoriasis), Koilonychias (spoon-shaped nails----seen in long standing iron deficiency anemia) o Clubbing When two fingers are approximated normally there is a space btw the two nails. In clubbing this is absent (Schamroth's sign). Clubbing simply means loss of angle. Seen in diseases of heart and lungs o Clubbing is explained later ❖ **Examination of fingers** o Osler's nodes---pea size painful swelling in the pulps of terminal phalanges seen in infective endocarditis o Heberden's nodes --------bony swellings o Bouchards nodes

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- ❖ Examination of The Hands ad palms
  - o Pallor: in anemia
  - o Cyanosis: CVS and respiratory disease
  - o Sweating – excessive sweating may be idiopathic, but is also seen in anxiety (palm is cold and sweaty), and thyrotoxicosis (palm is warm and sweaty)
  - o Dupuytren's contracture ---there is thickening of palmar fascia felt as thickened plaque or cord between palm and ring and little finger ---seen in alcoholic cirrhosis
  - o Palmar erythema: reddening of the palms at thenar and hypothenar eminence. Seen in chronic hepatitis and portal HTN.

Vital Signs Examination

- ❖ It includes:
  - o Temperature
  - o Respiratory rate
  - o Pulse rate
  - o Blood pressure

Few Points to Be Remembered

- Start.by placing a thermometer in axilla for a minute
- During this minute examine the pulse for 30 secs if regular or for a full one minute if irregular ---at the end compare pulse in left hand as well as femoral---how and what to look for pulse is explained later
- During this one minute----also count respiratory rate
- After this---remove the thermometer, and then check the Blood pressure (How to check BP is given separately in CVS)

Examination of Face

- ❖ General appearance
  - o Characteristics facies e.g. moon like face in Cushing, mask like or expressionless face in parkinsonism
- ❖ Look for puffiness
  - o Seen in renal failure, nephrotic syndrome, nephritic syndrome, angioedema
- ❖ Eyes:
  - o Look for any infection, redness and a quick general look
  - o Exophthalmos---it means protrusion of eyeball seen in Grave's disease
  - o Xanthelasmas---yellow plaques on eyelids seen in hyperlipidemia
  - o Conjunctiva --- check for anemia
    - ✓ Ask the patient to look upwards, pull the lower eyelid downwards
    - ✓ Remember check both eyes at the same time, use both hands
  - o Yellow discoloration of sclera for jaundice
    - ✓ Ask the patient to look downwards and pull the upper eyelid upwards
    - ✓ Normal its white, but in jaundice becomes yellow
    - ✓ Remember: use your left hand to pull the upper eyelids and use your right hand as an object to which patient should look at. Check both eyes at the same time
- ❖ **Cheeks:**
  - o In SLE there is a rash over check and bridge of nose (butterfly rash)
- ❖ **Nose:**
  - o Look for any discharge, symmetry, deviated nasal septum
- ❖ Bluish discoloration of the tip of nose and ear lobules for cyanosis
- ❖ Tongue:
  - o Dryness, pallor and cyanosis of dorsum of tongue
  - o Yellowness of the undersurface of the tongue

Examination of The Neck

- ❖ Examination of thyroid (discussed separately)
- ❖ Examination of JVP (discussed separately)
- ❖ Examination of lymph nodes
  - o Neck lymph nodes
    - ✓ Submental (under the chin)
    - ✓ Submandibular (under the jaw)
    - ✓ Pre and post auricular

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	✓ Lymph nodes of posterior triangle behind the Sternocleidomastoid ✓ Lymph nodes of Anterior triangle in front of Sternocleidomastoid o Axillary lymph nodes ✓ Right axilla • Lymph nodes of apical central and medial group----------Elevate the patient arm above his head **with right hand and push fingers of left hand** up in axilla, palm facing patient's chest, bring back patients arm alongside his chest • Lymph nodes of anterior group -------For palpation of anterior group hold anterior axillary folds between thumb and fingers of your left hand • Lymph nodes of Lateral group -------place palmar aspect of **fingers of your right hand** along the medial side of humerus • Lymph nodes of Posterior group---hold posterior axillary folds between thumb and fingers of your corresponding hand from behind the patient ✓ Left axilla • Same process is repeated • Apical central and medial groups are **palpated with right hand** • While lateral group **palpated with left hand** o Inguinal lymph nodes • Palpable over the inguinal ligament
Examination of Feets	❖ Look for clubbing, cyanosis and koilonychia in feet as well ❖ Feet are commonly affected by ischemia due to peripheral vascular disease, early signs are loss of hair and shimmy skin ❖ Look for edema o Look for edema on dorsum of the foot and shin o In a bed ridden patient also check over the sacrum o **Compare both legs while examining** o Press the thumb for at least 5 seconds
Last and most important step	❖ **Say thank you to the patient and cover the patient**

Few Common Questions in General Physical Examination

Que: 1 What are the causes of pitting and non-pitting edema?

	Causes of Edema
Pitting edema	**Generalized / bilateral** ❖ Cardiovascular system o Right heart failure, constrictive pericarditis, IVC obstruction ❖ Renal failure ❖ Nephrotic syndrome ❖ Liver cirrhosis ❖ Malnutrition ❖ Malabsorption **Localized** ❖ Immobilization ❖ Venous obstruction
Non-pitting edema	❖ Lymphatic obstruction ❖ Angioedema

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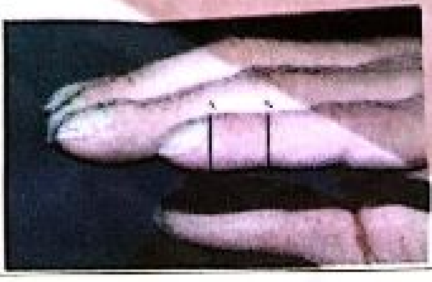
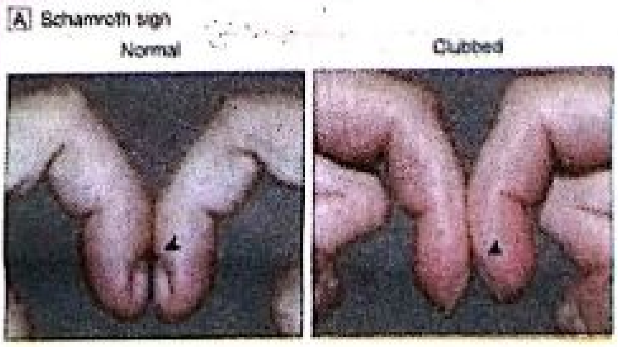
Que: 2 How to check clubbing, its causes and degree of clubbing?

Definition	❖ Bulbous enlargement of the ends of one or more fingers or toes 
Grades of Clubbing	❖ Stage 1: o Fluctuation of nail bed ❖ Stage 2: o Loss of the normal <165° angle (Lovibond angle) between the nail-bed and the fold (Schamroth's window is obliterated. Clubbing is not obvious at a glance). ❖ Stage 3: o Increased convexity of the nail fold. Clubbing is apparent at a glance. ❖ Stage 4: o Thickening of the whole distal (end part of the) finger (resembling a **drumstick**) ❖ Stage 5 o Hypertrophic osteoarthropathy→ Shiny aspect and striation of the nail and skin
Schamroth's Test or Schamroth's Window Test	❖ Place fingernails of same finger on opposite hands against each other, nail to nail. ❖ A small diamond-shaped "window" is normally apparent between the nail-beds. ❖ If this window is obliterated, the test is positive and clubbing is present. 
Causes of Clubbing	Pulmonary: ❖ Lung CA, bronchiectasis, pulmonary fibrosis, abscess, CF, empyema Cardiac ❖ Cyanotic heart disease, endocarditis, A-V fistula Gastrointestinal ❖ IBD, celiac, cirrhosis Endocrine ❖ Graves Others ❖ Malignancy, Primary hypertrophic osteoarthropathy
Clinical Pearls	➜ **Clubbing is not seen in COPD = if present, think malignancy** ➜ **Differential clubbing -----it means clubbing in the toes but not in fingers e.g. in PDA with revered shunt**

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Que: 3 What are the causes of palpable lymph nodes?

Infections	❖ Viral o HIV, EBV, CMV. ❖ Bacterial o Brucellosis, leptospirosis, TB, Streptococcal. ❖ Protozoal o Toxoplasmosis ❖ Fungal o Histoplasmosis & Coccidioidomycosis
Immunologic	❖ Collagen vascular disease, Drug hypersensitivity (e.g., phenytoin), serum sickness
Neoplasm	❖ Lymphoma, leukemia, amyloidosis, metastatic carcinoma
Other	❖ Sarcoidosis; lipid storage diseases
Factors That Favor Biopsy	❖ Age (40 Y) ❖ Size (2 Cm) ❖ Location (supraclavicular is always abnormal) ❖ Duration (1 Month).
Characteristic Findings of lymph nodes	❖ Matted lymph nodes ✓ TB (most common) ✓ Lymphoma ✓ Actinomycosis ❖ Hard lymph nodes ✓ Malignancy ❖ Tender lymph nodes ✓ Acute inflammation (may be secondary to mastoiditis, tonsilitis) ✓ Infection of lymph nodes itself ❖ Lymphadenopathy with sinus ✓ Tuberculosis

Pigmentation

Causes of pigmentation	❖ Physiological o Familial, pregnancy & sunbath ❖ Pathological o Endocrine causes: ▪ Addison, Cushing, Nelson syndrome o Infections ▪ Kala Azar o CLD: ▪ Hemochromatosis, primary biliary cirrhosis o GIT ▪ Whipple disease o Drugs ▪ Busulphan, amiodarone, Phenytoin and phenothiazines o Others: ▪ Chronic arsenic poisoning.
Hints	❖ History of fever in kala azar ❖ Hepatosplenomegaly in kala azar ❖ BP (low in Addison) ❖ Abdomen (bilateral adrenalectomy scar in nelson syndrome) ❖ Evidence of other chronic illness

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Examination: 2 Cardiovascular system

Common Commands:

- Examine the CVS
- Examine the precordium
- Examine the precordium and pulse

Important TIP:

- Watch YouTube videos on examination, practice as much as you can along with the timer, try to perform examination in 2 minutes---so that you can answer the examiner questions then.

Examination of Cardiovascular System:

- Steps include
  - Examination of hand
  - Examination of pulse
  - Measurement of blood pressure
  - Examination of neck veins
  - Examination of precordium (inspection, palpation and auscultation)

Examination of Precordium:

- Steps include
  - Inspection
  - Palpation
  - Auscultation

Examination of Precordium and Pulse

- Steps include
  - Inspection
  - Palpation
  - Auscultation
  - After then check for pulse (rate, rhythm, volume, character, and comparison with other pulses and match with your relevant findings of precordium)

Examination of pulse, BP, neck veins discussed separately

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Examination of CVS

Introduction	❖ If there is a sanitizer beside patient, make sure to use that ❖ Be sure that you are **on the right side of the patient** ❖ At the same time say greetings, introduce yourself, take permission and explain what you are going to do ❖ Check the patient is not in any pain or discomfort and ensure he/she is positioned correctly, ideally with the chest fully exposed (this may cause embarrassment in female patients so one can try and access the auscultation points without full exposure but this may compromise the accuracy of the examination). ❖ The patient should be lying in bed with their upper body at 45 degrees and a pillow supporting the head ❖ Note any medical equipment attached to the patient or in the bedspace
Examination of Hand	❖ In hands look for ○ Clubbing ○ Cyanosis ○ Koilonychia ○ Splinter hemorrhages ○ Osler nodes (painful subcutaneous nodules in pulp of digits) ○ Janeway lesions (small, painless, erythematous lesions on palm or sole)
Examination of pulse	❖ Discussed separately
Examination of Blood pressure	❖ Discussed separately
Examination of JVP	❖ Discussed separately
Examination of precordium	❖ Discussed separately
Examine the back, abdomen and legs	❖ Ask the patient to lean forwards. ❖ Percuss the lung bases for a pleural effusion and auscultate for fine inspiratory crackles (signs of heart failure). ❖ Check for sacral oedema by placing one finger firmly on the sacrum for ten seconds and observing for the persistence of an indentation after release. ❖ Examine the ankles for pedal oedema by placing one finger firmly on the ankle for five seconds and observing for the persistence of an indentation after release. ❖ If present, repeat the procedure at regular points on the legs moving upwards towards the knees. Note the point on the leg to which the oedema extends.
Completing the Examination	❖ Thank the patient, help them back into comfortable posture and wash your hands. ❖ Give the patient some privacy to redress. ❖ In an OSCE you should finish by addressing the examiner, stethoscope behind your back, not looking back at the patient. ❖ Mention the examination **you wanted to perform but did not perform. These will include examination of the toenails, examining for radio-femoral delay, and measuring postural blood pressure.**

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Examination of Pulse

Rate

- Tachycardia ---pulse rate more than 100/min
- Bradycardia---pulse rate less than 60/min
- Relative bradycardia---usually pulse rises 10 beats/min for each degree rise in temperature ---if pulse is slower than expected for body temperature it is called relative bradycardia

Causes of Tachycardia	Causes of Bradycardia
Physiological (anxiety, emotion, exercise, pregnancy)	Physiological (athletes, during sleep)
Pathological (Fever, anemia, thyrotoxicosis, tachyarrhythmias)	Pathological (Myocardial infarction, drug effects, hypothyroidism)

Rhythm

- It is interval between successive pulses
- Normally it is constant and regular
- Causes of irregular pulse
  - Regularly irregular: Follows a definite pattern of regular rhythm followed by irregular rhythm
    - Sinus arrythmias---pulse increases with inspiration and decreased with expiration
    - Occasional ectopics
  - Irregularly irregular: there is no pattern and beats occur irregularly
    - Atrial fibrillation
    - Multiple ectopics
    - Atrial flutter with variable block

Volume

- High volume
  - E.g. Fever, aortic regurgitation
- Low Volume
  - E.g. Heart failure, shock,

Character

Pulse Type	Definition	Examples
Pulsus paradoxus	>10mmHg fall in systolic blood pressure during inspiration---faint or absent pulse on inspiration	Cardiac tamponade; Severe asthma
Slow rising pulses	This wave form is characterized by a slow upstroke.	Aortic stenosis
Collapsing pulse (Water-hammer pulse)	Is a large bounding pulse associated with increased stroke volume of the left ventricle and decrease in the peripheral resistance, leading to a wide pulse pressure. The pulse strikes the palpating finger with a rapid, forceful jerk and quickly disappears	Aortic regurgitation; Patent ductus arteriosus; Hyperkinetic (anemia, thyrotoxic, fever, exercise/pregnancy)
Pulsus alternans	Pulsus alternans is characterized by a strong and weak beat occurring alternately, probably due to alternate rather than regular contraction of the muscle fibres of the left ventricle.	Severe LVF
Pulsus bisferiens	Pulsus bisferiens is a rapid rising, twice beating pulse	Aortic valve disease
Jerky pulse	Rapid upstroke due to the vigorous contraction of the hypertrophic left ventricle	HOCM

Comparison with other pulses

- Radio-Femoral Delay
  - Delay of the femoral pulse as compared with the radial pulse seen in Coarctation of aorta
- Radio-Radial delay
  - Delay of the radial pulse on one side as compared with the radial pulse of the other side
  - Seen in Thoracic inlet syndrome e.g. cervical rib pressing on the subclavian artery of one arm, delaying the radial pulse on that side.

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Cardiovascular system

	❖ Do not forget to examine collapsing pulse while counting the pulse in initial steps

Examination of Blood Pressure

Note the following points	❖ Remove the clothing from the upper arm ❖ Support the arm at the level of the heart ❖ Use a cuff of appropriate size (> two-thirds of the arm) small cuffs may give falsely high readings ❖ Hypertension should be confirmed in both arms, and the higher reading should be used. ❖ **Measure BP in both arms, with additional standing BP (in elderly and diabetic patients)** ❖ The Cuff should be placed 2.5cm above the cubital fossa and tube should be on medial side
Palpatory method	❖ Feel the radial pulse ❖ Inflate the cuff to a pressure above the level at which radial pulse becomes impalpable—this is taken as systolic pressure---- and then gradually deflate it—**remember deflate the cuff completely**
Auscultatory method	❖ Palpate the brachial artery which lies on medial side of the tendon of bicep ❖ Place stethoscope and inflate the cuff above the systolic pressure determined by palpatory method ❖ Deflate the cuff slowly 5mmHg at a time ❖ The level at which kortokoff sounds heard first is the systolic pressure ❖ The level at which sounds disappears is the diastolic pressure ❖ **Remember deflate the cuff completely** Remember do mention that I would also like to check for postural hypotension, if you can't complete your examination or you can't make the patient stand during examination

Examination of JVP

Normally	❖ Look for venous pulsation in the internal jugular vein ❖ Normally it is 2-3 cm,
Uses	❖ Gives nearly accurate measurement of right atrial pressure
Method	❖ **Examine the patient from the right side, while head of the bed is elevated at 45 degrees** ❖ The head should be well supported and slightly tilted towards left ❖ Proper light should be present ❖ Once upper limit of venous pulsation determined ❖ JVP is measured by two ruler method, one placed at sternal angle and other at upper limit of venous pulsation. ❖ Measure it in cm
Causes of raised JVP	❖ CCF (Right heart failure), pericardial effusion, valvular diseases, SVC obstruction
Difference between arterial and venous pulsation	see table below
Waves of JVP	❖ a wave—atrial contraction. Absent in atrial fibrillation. ❖ c wave—RV contraction (closed tricuspid valve bulging into atrium). ❖ x descent—atrial relaxation and downward displacement of closed tricuspid valve during ventricular contraction. Absent in tricuspid regurgitation. ❖ v wave—Inc. right atrial pressure due to filling ("villing") against closed tricuspid valve. ❖ y descent—RA emptying into RV

Difference between arterial and venous pulsation:

Venous pulsation	Arterial pulsation
It is wavy (two peaks with cardiac cycle)	Not wavy
It has upper limit	No definite upper limit
Varies with posture and inspiration	Independent of posture & inspiration

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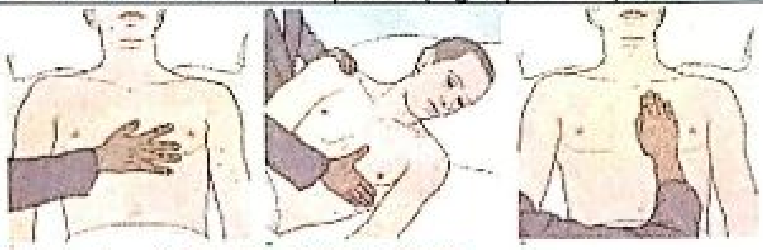
Examination of Precordium

- If there is a sanitizer besides, make sure to use that
- Be sure that you are **on the right side of the patient**
- At the same time say greetings, introduce yourself, take permission and explain what you are going to do
- Check the patient is not in any pain or discomfort and ensure he/she is positioned correctly, ideally with the chest fully exposed (this may cause embarrassment in female patients so one can try and access the auscultation points without full exposure but this may compromise the accuracy of the examination).
- Note any medical equipment attached to the patient or in the bedspace
- **Position**
  - The patient should be lying in bed with their upper body at 45 degrees and a pillow supporting the head

Inspection	❖ Begin the examination **at the foot end of the bed** with an inspection of the patient's general condition and their surroundings. ❖ Look for scars (For scars you can ask the patient to raise arms, but don't touch the patient, you can come closer even) o Look at the midline of the chest for a median sternotomy scar which would indicate previous valve surgery or a coronary artery by-pass graft. o Examine the mid-axillary lines for a lateral thoracotomy scar indicating previous thoracic surgery. o Look under the clavicles for a cardiac pacemaker or defibrillator. ❖ Look for visible cardiac impulses (e.g. Apex beat)
Palpation	 ❖ **Be on the right side of the patient** ❖ **Apex Beat** 1. **Palpate the apex beat first.** o The apex beat is defined as the most lateral and inferior point on the chest wall at which a cardiac impulse can be felt. o Place palm over left side of chest so that it covers 4th to 7th intercostal spaces and finger tips extending to lateral side of chest o Once palpated, locate it with tip of finger o If the apex beat is impalpable here, move inferiorly and laterally or ask the patient to turn left lateral 2. **Localization** o The **finger of right hand should be placed on apex beat** o **While with left hand Then identify the sternal angle** found at the junction of the sternum and second rib, move your fingers laterally and inferiorly to the second intercostal space, then count down the intercostal spaces in the midclavicular line. o The apex beat should be situated in the fifth intercostal space along the midclavicular line. 3. **Character of apex beat** o Normally it is neither forceful nor it lift the palpating finger o Tapping apex beat: ▪ Tapping' apex beat is a palpable first heart sound and a sign of mitral stenosis ▪ Apex beat is forceful but the palpating fingers is not displaced o Heaving apex beat:

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- Apex beat is forceful & the palpating fingers is lifted
- It is of two types
  - Apex is heaving, sustained and forceful, and develops as a result of aortic stenosis or hypertension
  - Apex is diffuse and displaced laterally and/or inferiorly. This may be a feature of aortic or mitral regurgitation

❖ **Left Parasternal Heave**

- Also known as right ventricular heave it is due to right ventricular enlargement
- Place the heel of your right hand over the lower left sternal edge and feel for a right ventricular heave as a push against your hand.

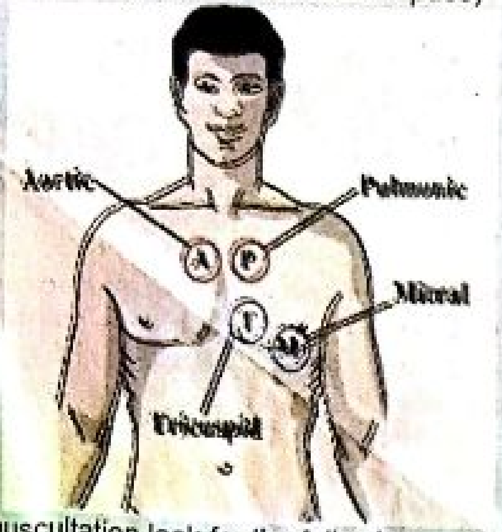
❖ **Thrill**

- When a loud murmur becomes palpable it is called thrill
- Then feel for thrills by systematically placing the flat of your hand over the apex (mitral valve area), lower left sternal edge (tricuspid valve area), right 2nd intercostal space (aortic valve area) and left 2nd intercostal space (pulmonary valve area)

Auscultation

❖ Begin auscultation of the heart by listening over the four valve areas shown in the figure below with the diaphragm of the stethoscope.

❖ Auscultate in the following order:
- Mitral (5th intercostal space--mid clavicular line)
- Tricuspid (left 4th intercostal space)
- Aortic (right 2nd intercostal space)
- Pulmonary (left 2nd intercostal space)



❖ During auscultation look for the following
- Heart sounds
- Other abnormal sounds (e.g. opening snaps, ejection systolic click, prosthetic valve sounds, pericardial friction rub etc.)
- Murmurs and their radiation

1. **Heart sounds**

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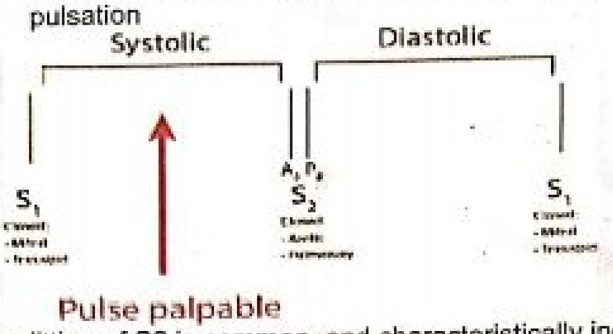
- When auscultating the valve areas, start by identifying the first (S1) and second (S2) heart sounds which are caused by the closure of the atrioventricular and semi-lunar valves respectively.
- How to distinguish between S1 and S2
  - Palpate the peripheral pulse, carotid or radial while auscultating.
  - S1 marks the start of systole and coincides with the peripheral pulsation



- Physiological splitting of S2 is common, and characteristically increases at end-inspiration but wide splitting (exaggerated physiological splitting), fixed splitting (unaffected by respiration) and reverse splitting (widens in expiration) all have underlying pathologies explained separately
- The 3rd heart sound (S3) is a low-pitched extra heart sound that occurs in early diastole, just after S2, and is best heard over the apex. It produces a 'gallop' rhythm often compared to the cadence of the word 'Kentucky' with the syllable's 'ken', 'tuc' and 'ky' representing S1, S2 and S3 respectively.
- The presence of the third heart sound may indicate left ventricular failure, mitral regurgitation or high output cardiac states, but it can be physiological in the young and pregnancy
- Listen for a fourth heart sound (S4), which is slightly higher-pitched and occurs in late-diastole, immediately before S1. It produces a 'gallop' rhythm often compared to the cadence of the word 'Tennessee' with the syllables 'ten', 'nes' and 'see' representing S4, S1 and S2 respectively.
- A fourth heart sound is indicative of a poorly compliant ventricle and is always pathological, associated with aortic stenosis, hypertension and left ventricular failure.

❖ **Other Abnormal Sounds**

- First, listen for an ejection click, a high-pitched ringing sound heard in early systole shortly after S1. This is a feature of aortic or pulmonary stenosis and is thought to be caused by the sudden opening of the deformed valve.
- Listen for a mid-systolic click, a sound most often associated with mitral valve prolapse which may be accompanied by a late systolic murmur.
- Listen in early diastole for an opening snap heard in mitral stenosis. This is best heard over the lower left sternal edge and is caused by the rapid opening of a stenosed but pliable mitral valve under high left atrial pressure.
- Finally, listen throughout the cardiac cycle for the 'walking on snow' sound of a pericardial friction rub, caused by pericarditis.

2. **Murmurs**
   - Murmurs should be considered in terms of timing, intensity and radiation.
   - Timing
     - Systolic vs diastolic murmur
       - Palpate the carotid artery while auscultating
       - Murmur which comes with carotid pulsation is systolic and murmur which alternated with it is diastolic

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- Intensity (Grades of murmur)
  - Grade-1: Murmur audible with great difficulty in a quiet room
  - Grade-2: Murmur easily audible but not loud
  - Grade-3: Loud murmur without thrill
  - Grade-4: Loud murmur with a thrill
  - Grade-5: Loud murmur audible even outside the precordium
  - Grade-6: Murmur audible without stethoscope
- Radiation
  - Mitral regurgitation murmur----radiates to axilla
  - Tricuspid regurgitation murmur---radiates upward along sternal border
  - Aortic stenosis---- radiates towards carotid
- Auscultate with Maneuver's
  - Murmurs are accentuated by the position of the patient during auscultation and the following maneuvers should be performed as part of the routine examination.
  - For mitral stenosis
    - Ask the patient to turn onto their left-hand side. Ensure they are comfortable then ask them to hold their breath in expiration.
    - Auscultate the apex with the bell. You are listening for the accentuated mid-diastolic murmur of mitral stenosis.
  - For aortic regurgitation murmur
    - Then ask the patient to sit forward. Ensure they are still comfortable and again ask them to hold their breath in expiration.
    - Auscultate over the lower left sternal edge with the diaphragm. You are listening for the accentuated early diastolic murmur of aortic regurgitation.

Remember:

- Whilst expiration accentuates left-sided murmurs, inspiration accentuates right-sided murmurs.
- This can be remembered because RIGHT has an 'I '(Inspiration) in it and LEFT has an 'E '(Expiration) in it.
- And this may help in distinguishing the pan-systolic murmurs of mitral and tricuspid regurgitation.
- A pansystolic murmur that increases in intensity in expiration is most likely due to mitral regurgitation whereas one that increases in inspiration is most likely due to tricuspid regurgitation.

- Auscultate the back of chest for pulmonary edema as well
- Also mention that you would like to check sacral edema, pedal edema, palpate the liver (for enlarged liver in CCF). Spleen for spleenomegaly (as may be seen in valvular diseases especial bacterial endocarditis)—**but don't examine it as your command is to examine the precordium only**

- **Don't forget to Cover the patient and say thank you to the patient**

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Few Common Questions in CVS Examination

Que: 1 How to check postural hypotension and pulses deficit?

Postural hypotension	❖ Blood pressure recorded while the patient is lying (at-least for 5 mins) ❖ Blood pressure is then recorded twice while patient is standing in the first min and then at 3 minutes ❖ Orthostatic hypotension is diagnosed if a drop of 20 mm Hg in systolic blood pressure or a drop of 10 mm Hg in diastolic blood pressure occurs. ❖ Table Tilt test: ✓ Table tilt test evaluates how your body reacts to changes in position. You'll lie on a flat table that tilts to raise the upper part of your body, which simulates the movement from lying down to standing. Your blood pressure is taken frequently as the table is tilted.
Pulses Deficit	❖ **Definition** ✓ Pulse deficit is a clinical sign wherein, one is able to find a difference in count between heart beat (Apical beat or Heart sounds) and peripheral pulse. ❖ **Causes:** ✓ This occurs even as the heart is contracting, the pulse is not reaching the periphery. This can occur in few clinical situations. ✓ Atrial fibrillation. ✓ Very early diastolic ventricular ectopic beats ✓ Some patients with Pacemaker. ❖ **Mechanism** ✓ The mechanism is, the ventricular contractions are too weak and unable to open the aortic valve (Or opens feebly*), but at the same time they are good enough to close the mitral valve. To open the aortic valve, it has to generate at least 60-80 mmHg pressure, while mitral valve closes even as LV generates 8-14mmhg, (LV/LA pressure cross over). ✓ So intermittently the second heart sound is missed while S1 is retained, producing more heart sounds and less pulse count in the periphery. ✓ The S1 is either felt or heard at the apex but the corresponding pulse is missing. Further, this intermittent absence of S2 results in totally irregular S1 /S2 relation. ❖ **How to Check (Method)** ✓ Count the Radial pulse for complete 1 minute ✓ Then count the apex beat with stethoscope for complete 1 minute ✓ Pulse is said to be deficit if the difference is more than 2 beats. ✓ You may be asked to measure the deficit (Apex beat – Pulse beats) ✓ How to Locate the apex beat • The finger of right hand should be placed on apex beat • While with left hand then Identify the sternal angle found at the junction of the sternum and second rib, move your fingers laterally and inferiorly to the second intercostal space, then count down the intercostal spaces in the midclavicular line. • The apex beat should be situated in the fifth intercostal space along the midclavicular line. ❖ **How do you assess rate control in atrial fibrillation following digoxin or beta blockers?** ✓ One should ideally rely on heart rate or the ECG rather than the pulse rate.

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Cardiovascular system

Que: 2 Mitral Stenosis, features, findings, treatment?

Definition	❖ It is a condition Characterized by narrowing of mitral valve orifice resulting in left atrial hypertrophy and dilation. ❖ Normal mitral valve orifice area is ~4-6cm^2. ❖ Symptoms usually begin when the orifice becomes <2cm^2 (Severe MS is mitral valve area (MVA) <1.0 cm^2)
Causes	❖ Rheumatic heart disease — most common cause ❖ Mitral annular calcification ❖ Malignant carcinoid
Symptoms	❖ Dyspnea on exertion (most common) ❖ Palpitations due to atrial fibrillation ❖ Fatigue due to low cardiac output. ❖ Dysphagia (left atrium pressing on the esophagus) ❖ Ortner's syndrome (hoarseness from left atrium pressing on recurrent laryngeal nerve) ❖ Hemoptysis from pulmonary edema and pulmonary HTN ❖ Embolic events (e.g. stroke)
Signs	❖ Malar facies: o Bilateral dusky pink discoloration over upper cheeks. o It is due to decreased cardiac output and vascular stasis. ❖ **Apex beat — localized, and tapping.** ❖ **Heart sounds S1 is loud.** ❖ **Mid-diastolic murmur:** o Located at the apex; low-pitched. o Best heard in left-lateral decubitus position during expiration using bell of stethoscope. ❖ Signs indicating severe MS o As the opening snap moves closer to S2 MS gets more severe. o The length of mid-diastolic murmur is proportional to severity. o Presence of Graham-Steell murmur in the pulmonary area indicates pulmonary HTN and thus severe MS.
Investigations	❖ ECG--------atrial fibrillation; bifid P-waves i.e. P-mitrale (due to left atrial hypertrophy) ❖ CXR: o Straightening of left heart border (atrial hypertrophy) . ❖ Echocardiography: o Transthoracic echo (TTE) is the best initial test. o Transesophageal echo (TEE) is more accurate. ▪ Thickened immobile cusps; reduced valve area ▪ Enlarged left atrium
Treatment	❖ Medical Management: o Warfarin for atrial fibrillation to an INR of 2 to 3. o Ventricular rate control (digoxin, beta-blockers, and calcium channel blockers) in o Diuretics and sodium restriction o Endocarditis prophylaxis not recommended. ❖ Balloon Valvuloplasty: o It is the treatment of choice if following criteria are fulfilled. ▪ Significant symptoms ▪ Isolated mitral stenosis, No mitral regurgitation ▪ Mobile, non-calcified valve ▪ LA free of thrombus ❖ Valve Replacement: o It is indicated in following conditions: ▪ MS with mitral regurgitation ▪ Immobile, calcified valve ▪ LA thrombus [illegible]

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Que: 3 Mitral Regurgitation, features, findings. Treatment?

Definition	❖ It is a condition characterized retrograde blood flow into the left atrium during systole.
General consideration	❖ Mitral regurgitation places a volume load on the heart (increases preload) but reduces afterload. ❖ The result is an enlarged LV with an increased EF. ❖ Over time, the stress of the volume overload reduces myocardial contractile function; ❖ when this occurs, there is a drop in EF and a rise in end-systolic volume
Causes	❖ Rheumatic fever prevalent countries rheumatic heart disease (50%) ❖ Rheumatic fever non-prevalent countries mitral valve prolapse ❖ Left-sided heart failure ❖ SLE ❖ Marfans syndrome ❖ Ehlers-Danlos syndrome ❖ Acute Causes: o Endocarditis, Papillary muscle rupture (post MI)
Symptoms	❖ Acute→ pulmonary edema, hypotension, cardiogenic shock. ❖ Chronic → asymptomatic for years, then LV heart failure. ❖ Thromboembolism is less common than MS. ❖ Subacute infective endocarditis is much more common than MS
Signs	❖ Apex beat→ forceful, displaced with systolic thrill. ❖ Heart sounds→ soft S1; Split S2, Loud P2 (Pulmonary HTN) ❖ High-pitched, blowing, **pansystolic murmur** at apex: o It radiates to the axilla and increases with expiration. o It is increased with handgrip and decreased with Valsalva. ❖ Carotid upstroke: o MR = carotid upstroke is brisk. o AS carotid upstroke is diminished and delayed.
Investigations	❖ ECG = bifid P-waves i.e. P-mitrale (due to left atrial hypertrophy) & LVH ❖ CXR: o Enlarged LA and LV, Pulmonary venous congestion, Pulmonary edema (acute) ❖ Echocardiography is the best initial test. ❖ Cardiac catheterization is the most accurate test.
Treatment	❖ Diuretics ❖ ACE inhibitors decrease the rate of progression. ❖ Digoxin if AF is present

Mitral Valve Prolapse (MVP)

Introduction	❖ Also known as "Barlow Syndrome" or "Floppy Mitral Valve". ❖ It is due to myxomatous degeneration of mitral valve. ❖ It is a condition characterized by retrograde blood flow into the left atrium during systole due to posterior bulging of anterior and posterior mitral leaflets into left atrium
Causes	❖ Idiopathic, Familial (autosomal dominant), Marfan syndrome, Ehler-Danlos syndrome
Presentation (4P's)	❖ Pain (atypical chest pain) — is the most common symptom. ❖ Palpitations ❖ Panic attacks ❖ High-Pitched. **mid-systolic click** — is the most common sign
Diagnosis	❖ Echocardiography is investigation of choice. ❖ Mitral prolapse is often associated with aortic root disease, and any evidence for a dilated aorta by chest radiography should prompt either CT or MRI angiography.
Treatment	❖ Atypical chest pain and palpitations. —beta blockers ❖ MVP+ MR + AF= anticoagulation ❖ MVP + Severe MR surgical repair (due to risk of sudden death)

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Que: 4 Aortic Stenosis, features, findings & treatment?

Definition	❖ It is the most common of all valvular abnormalities ❖ Definition o Normal aortic valve area = 3-4 cm2 o Mild AS 1.5 to 3 cm2 o Moderate AS 1.0 to 1.5 cm2 o Severe AS <1.0 cm2 o Critical AS <0.5 cm2
Causes	Calcific aortic valve stenosis (dystrophic calcification) ---most common cause Congenital abnormal unicuspid or bicuspid valve Rheumatic heart disease
Symptoms	❖ Angina (most common) ❖ Syncope ❖ CHF (most serious) ❖ Hemolytic anemia with schistocytes. ❖ Sudden death
Signs	❖ Apex beat — not displaced, sustained ❖ Heart sounds -----soft A2 (i.e. aortic component of 2nd heart sound); S4 (said to occur more often with bicuspid valves, but not in all populations) ❖ Pulse ----**Slow-rising pulse with narrow pulse pressure** (feel for diminished and delayed carotid upstroke—parvus et tardus) ❖ Crescendo-decrescendo ejection **systolic murmur** at right 2nd intercostal space: o Murmur radiates to carotids o Murmur is increased with passive leg raise (increased pre-load) and decrease with standing and Valsalva (decreased pre-load) ❖ Signs indicating severe AS; o Late-peaking murmur o Paradoxical splitting of S2 o InaudibleA2 o Pulsus parvus et tardus (pulses weak compared to heart sounds)
Investigations	❖ ECG: o P-mitrale, LVH with strain pattern; LAD (left anterior hemiblock) o LBBB or complete AV block (calcified ring). ❖ CXR: o LVH; calcified aortic valve o Post-stenotic dilatation of ascending aorta. ❖ Echo: o Doppler echo can estimate the gradient across valves o Severe stenosis if peak gradient ≥50mmHg and valve area <1cm2.
Treatment	❖ Without surgery 3 years mortality rate ❖ Asymptomatic patients with severe aortic stenosis (aortic valve area less than 1.0 cm^2) should generally undergo intervention according to the following guidelines o They are undergoing other cardiac surgery (i.e., CABG). o There is evidence for a reduced LVEF (less than 50%) o When there is severe valvular calcium ❖ Symptomatic patients--- Valve replacement ❖ If patient not fit for surgery----Percutaneous valve replacement

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Que: 5 Aortic Regurgitation, features, findings & treatment?

Definition	❖ It is a condition characterized by retrograde blood flow into the left ventricle due to an incompetent aortic valve or dilated valve ring
Pathophysiology	❖ Also called aortic insufficiency, this condition is due to inadequate closure of the aortic valve leaflets. Regurgitant blood flow increases left ventricular end diastolic volume. ❖ LV dilation and hypertrophy occur in response in order to maintain stroke volume and prevent diastolic pressure from increasing excessively. ❖ Over time, these compensatory mechanisms fail, leading to increased left-sided and pulmonary pressures. ❖ The resting left ventricular EF is usually normal until advanced disease.
Causes	❖ Acute o Infective endocarditis o Trauma o Aortic dissection o Iatrogenic as during a failed replacement surgery ❖ Chronic o Primary valvular: Rheumatic fever, bicuspid aortic valve, Marfan syndrome, Ehlers–Danlos syndrome, ankylosing spondylitis, SLE o Aortic root disease: Syphilitic aortitis, osteogenesis imperfecta, aortic dissection, Behçet syndrome, Reiter syndrome, systemic HTN
Symptoms	❖ Usually only becomes symptomatic late in disease when LV failure develops ❖ Dyspnea, orthopnea, PND, syncope, angina
Signs	❖ Apex beat → displaced, heaving. forceful ❖ Pulse → large volume, Collapsing (water-hammer) pulse ❖ Pulse pressure → Wide ❖ High-pitched early diastolic decrescendo murmur at left sternal border. o Increases with sitting forward, expiration and handgrip. o Severity of AR is proportional to the duration of murmur. ❖ Classic signs: o **Water hammer pulse** --- wide bounding pulse with rapid rise and fall. o **De-Musset's sign** ---- head nodding with each heart beat o **Mullers sign** ----- pulsatile bobbing of the uvula o **Quincke's sign** - capillary pulsations in the nail bed o **Durozieis sign** --- in the groin, a finger compressing the femoral artery 2cm proximal to the stethoscope gives a systolic murmur; if 2cm distal, it gives a diastolic murmur as blood flows backwards o **Traube's sign** --- pistol-shot bruit over femoral pulse.
Investigation	❖ ECG→ LVH, LAE ❖ CXR → LVH, LAE, aortic root dilatation ❖ Echo/TTE → quantify AR, leaflet or aortic root anomalies ❖ Cath → if >40 yr. and surgical candidate – to assess for ischemic heart disease ❖ Exercise testing → hypotension with exercise
Treatment	❖ The main goal of medical therapy is to reduce systolic hypertension, ACE-I are helpful. ❖ Echo every 6–12 months to monitor. ❖ Indications for surgery: o Increasing symptoms o Enlarging heart on CXR/echo; o ECG deterioration (T-wave inversion in lateral leads); o IE refractory to medical therapy. o Aim to replace the valve before significant LV dysfunction occurs.
Poor Prognostic Factors	Predictors of poor post-operative survival: ❖ Ejection fraction <50%, ❖ NYHA class III or IV ❖ Duration of CCF >12 months

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Quick Summary of Few Cases

	Mitral stenosis	Mitral Regurgitation	Aortic Stenosis	Aortic regurgitation
Apex Beat	❖ Tapping	❖ Heaving	❖ Heaving	❖ Heaving
Heart sound	❖ Loud S1 ❖ Opening Snap	❖ Soft S1	❖ Soft A2	❖ Soft A2
Murmur	❖ Mid diastolic murmur at apex	❖ Pansystolic murmur at apex radiating to axilla	❖ Ejection systolic murmur at aortic area radiating to neck	❖ Early diastolic murmur at A2 area
Pulse			❖ Slow rising pulse	❖ Collapsing pulse

Tricuspid regurgitation
- ❖ Left parasternal heave
- ❖ S1 normal
- ❖ Pansystolic murmur at tricuspid area, loud on inspiration
- ❖ Systolic wave in neck veins, pulsatile liver

Murmurs Types

Ejection systolic	Aortic stenosis, HOCM, pulmonary stenosis, ASD, Fallot's
Holosystolic (pansystolic)	Mitral/tricuspid regurgitation (high-pitched and 'blowing' in character) VSD ('harsh' in character)
Late systolic	Mitral valve prolapse (mid-systolic click — is the most common sign) Coarctation of aorta
Early diastolic	Aortic regurgitation (high-pitched and 'blowing' in character) Graham-Steel murmur (pulmonary regurgitation, again high-pitched and 'blowing' in character)
Mid-late diastolic	Mitral stenosis ('rumbling' in character) Austin-Flint murmur (severe aortic regurgitation, again is 'rumbling' in character)
Continuous machine-like murmur	Patent ductus arteriosus (Murmur radiates to back)

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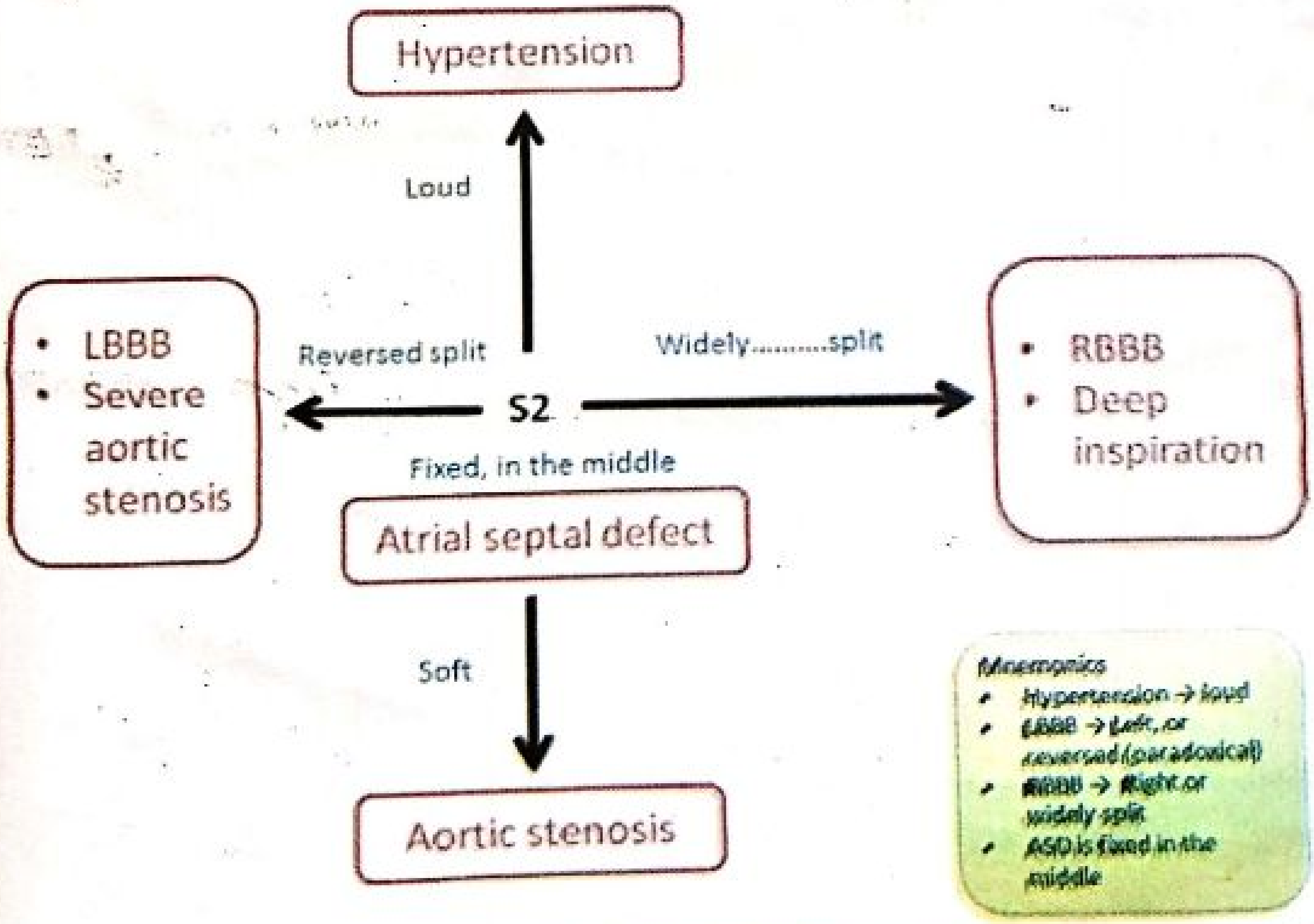
Heart Sounds

- S1—mitral and tricuspid valve closure. Low frequency, low intensity compared to S2
- S2—aortic and pulmonary valve closure.
- S3—Also known as **Gallop rhythm** due to rapid ventricular filling phase. **(e.g., mitral regurgitation, HF)**
- S4—in late diastole ("atrial kick"). Best heard at apex with patient in left lateral decubitus position Associated with ventricular hypertrophy **(HOCM)**

Splitting of heart sounds

Type	Causes
Loud S2	HTN
Soft S2	Aortic stenosis
Reversed or paradoxical split S2 When the pulmonic valve closes before the Aortic valve,	(left) LBBB, severe aortic stenosis
Widely split S2 When it takes longer to the pulmonic valve to close.	RBBB, deep inspiration
Fixed in the middle When splitting doesn't change with inspiration	Atrial septal defect



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Examination: 3 Respiratory System

Common Commands:
- Examine the Respiratory system
- Examine the Back of the chest
- Just percuss and Auscultate, what are your findings

Important TIP:
- Watch YouTube videos on examination, practice as much as you can along with the timer, try to perform examination in 2-3 minutes---so that you can answer the examiner questions then.

Examination of Respiratory system (Front and Back of chest)

- If there is a sanitizer beside patient in examination, make sure to use that
- Be sure that you are **on the right side of the patient**
- At the same time say greetings, introduce yourself, take permission and explain what you are going to do.
- Check the patient is not in any pain or discomfort and ensure he/she is positioned correctly, ideally with the chest fully exposed (this may cause embarrassment in female patients so one can try and access the auscultation points without full exposure but this may compromise the accuracy of the examination).
- Note any medical equipment attached to the patient or in the bedspace
- **Position**
  - For front of the chest:
    - The patient should be lying in bed with arms abducted
  - For back of the chest
    - Patient should sit up with arms crossing front of the chest and each hand on opposite shoulder

Inspection	❖ For front of the chest • Begin the examination **at the foot end of the bed** with an inspection of the patient's general condition and their surroundings. ❖ For back of chest • Inspect the back from behind ❖ Look for • **Respiratory rate**— (normal is 14-16/min) • **Type of Respiration** • **Shape of the chest** ➢ Normal shape is elliptical i.e. ratio of antero-posterior to transverse diameter is 5:7 ➢ **Barrel shape chest**----antero-posterior diameter and transverse diameter becomes equal, it occurs in emphysema ➢ **Pectus carinatum (Pigeon chest)** -----prominence of sternum and costal cartilage e.g. in rickets, chronic respiratory disease in childhood ➢ **Pectus excavatum (Funnel chest)** ---- localized depression of the lower end of the sternum. Sometimes whole of sternum may be depressed. • **Movement of the chest** ➢ Compare movement of both sides of the chest, and see for unilateral or bilateral restriction. • **Look for scars** (For scars you can ask the patient to raise arms, but don't touch the patient, you can come closer even) ➢ Thoracotomy scars and thoracoplasty
Palpation	❖ Palpate for tenderness and crepitus ❖ Palpate for apex beat localization

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- The apex beat is defined as the most lateral and inferior point on the chest wall at which a cardiac impulse can be felt.
- Place palm over left side of chest so that it covers 4th to 7th intercostal spaces and finger tips extending to lateral side of chest
- Once palpated, locate it with tip of finger
- If the apex beat is impalpable here, move inferiorly and laterally or ask the patient to turn left lateral

❖ Position for trachea
- The patient should lie straight, head and neck in line with the body and neck, slightly extended.
- Trachea can be palpated by one finger, two fingers or 3 fingers.
- 2-fingers method
  - ➢ Push tips of two fingers (index and middle) in the suprasternal notch and compare space on either side of the trachea and the clavicular head of sternomastoid
- Causes of shift of trachea towards diseased side
  - ➢ Collapse of the lung
  - ➢ Fibrosis of the lung
- Causes of shift of trachea towards healthy side
  - ➢ Pneumothorax
  - ➢ Pleural effusion

❖ Movements of chest
- Compare movements of both sides by palpation
- Method:
  - ➢ Grasp sides of the chest with the fingers in such a way that the tips of outstretched thumbs approximate in the midline. Thumbs should not touch the chest wall.
  - ➢ Ask the patient to take deep breath and compare movements of thumb away from midline
  - ➢ Movement on thumb which is less on either side is considered abnormal
  - ➢ **It should be performed at two places in front and at three places at the back of chest.**

❖ Expansion of chest
- Measure chest circumference just below the nipple line with measuring tape at full inspiration and full expiration and difference between the two is chest expansion.
- Normally it is more than 5cm. it is considered abnormal if less than 2cm causes include emphysema, bronchial asthma, pulmonary fibrosis

❖ Vocal Fremitus
- Patient is asked to keep repeating the words such as one, one, one and feel the vibrations by placing palm on chest, if vibration felt is called vocal fremitus
- Examine the whole chest and compare both sides
- Causes of increased vocal fremitus
  - ➢ Consolidation, cavitation
- Causes of Decreased vocal fremitus
  - ➢ Pleural effusion, pneumothorax

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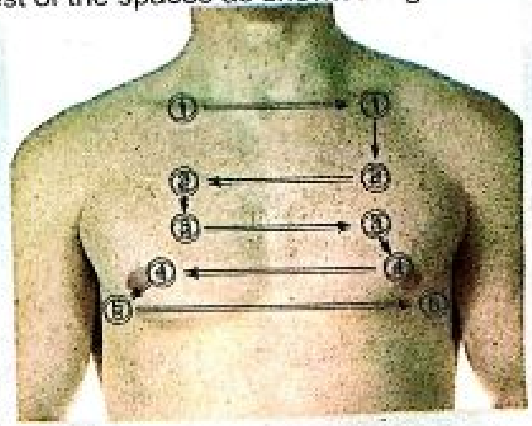
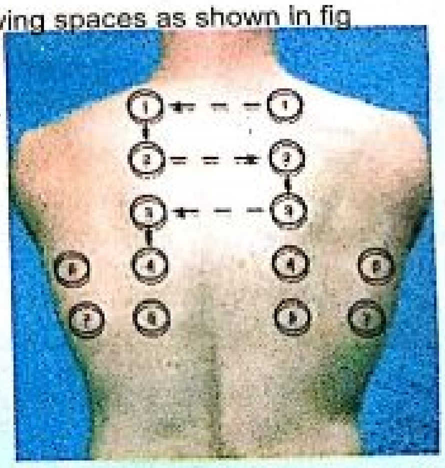
Percussion

- Percuss anteriorly and posteriorly along with lateral sides
- Keep pleximeter in intercostal spaces
- Anterior
  - Start from 2nd intercostal space
  - Remember for clavicles percuss with 3 fingers of right hand over medial 3rd of clavicle without using pleximeter
  - Percuss for the rest of the spaces as shown in fig



- Lateral
  - Percuss on the following spaces as shown in fig

- Posterior
  - Percuss on the following spaces as shown in fig



- Types of percussion note

Resonant	Normal lung
Hyper-resonant	Pneumothorax Emphysema
Dull	Consolidation Over liver, heart
Stony dull	Pleural effusion

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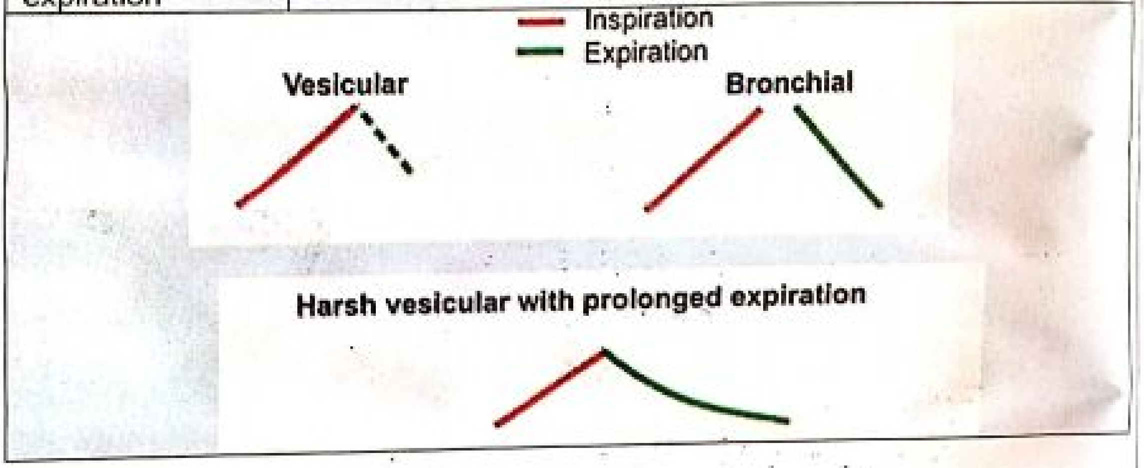
Auscultation

- Auscultate the same areas as described in percussion
- Note the following
  - Breath sounds
  - Added sounds
  - Vocal resonance

1. Breath sounds

Vesicular breathing	❖ Normal breathing sounds ❖ Inspiration is longer than expiration without any gap
Bronchial breathing	❖ Inspiration and expiration is of similar length with a gap in between them ❖ Causes: consolidation, cavitation
Vesicular breathing with prolonged expiration	❖ Causes: COPD, Asthma



2. Added sounds

Ronchi	❖ These are continuous musical, whistling sounds produced by passage of air through narrowed airways ❖ Causes: COPD, Asthma
Crepitations	❖ These are bubbling or crackling sounds occurs due to passage of air through fluid in alveoli ❖ Causes: Resolving pneumonia, bronchiectasis, lung abscess, pulmonary edema.

3. Vocal resonance
   - Similar to vocal fremitus but heard on auscultation
   - Ask the patient to repeat words like one, one, one or others and auscultate the chest
   - If a resonant sound is heard is called vocal resonance.
   - Compare both sides

Clinical pearls

- **Coin test**
  - Used for tension pneumothorax
  - With the help of other person, who is asked to place a coin on posterior chest and tap it with second coin
  - While you auscultate the front of the chest
  - Normally a dull sound is heard, if a ringing metallic sound is heard test is said to be positive
- **Succussion splash**
  - Used for hydropneumothorax
  - It is said to be positive, when patient is shaken a succussion sound is heard

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Few Common Cases in Respiratory Examination (Supposing Right Side Pathology)

	Inspection	Palpation	Percussion	Auscultation
Consolidation	❖ Restricted movements	❖ Trachea central and apex beat normal in position	❖ There is dullness (woody), mention the location....	❖ Breath sounds: bronchial ❖ Vocal resonance is increased ❖ Mention if any crepitations is present
Pleural Effusion	❖ Restricted movements ❖ (you may see puncture mark, gauze or tape—mention if any)	❖ Trachea and apex beat shifted to left side ❖ Vocal fremitus reduced or absent on right side ❖ Chest expansion reduced right side	❖ Stony dullness	❖ Breath sound: diminished or absent on right side ❖ Vocal resonance is decreased or absent
Pneumothorax	❖ Restricted movements ❖ Intercostal spaces may appear full	❖ Trachea and apex beat shifted to left side ❖ Vocal fremitus reduced or absent on right side ❖ Chest expansion reduced right side	❖ Hyperresonance	❖ Breath sound: diminished or absent on right side ❖ Vocal resonance is decreased or absent
COPD	❖ Patient is dyspneic with pursing of lips ❖ Chest: barrel shaped ❖ Prominent accessory muscles of respiration	❖ Trachea central ❖ Apex beat is not felt ❖ Chest expansion is reduced ❖ Vocal fremitus reduced bilaterally	❖ Hyperresonance	❖ Vesicular breathing with prolonged expiration ❖ Added sound: plenty of rhonchi

Que: Causes of crepitation, unilateral and bilateral?

Crepitations	❖ These are bubbling or crackling sounds occurs due to passage of air through fluid in alveoli
Causes:	❖ Unilateral causes: o Bronchiectasis o Resolving stage of pneumonia o Lung abscess ❖ Bilateral causes: o Bilateral Bronchiectasis, Pulmonary edema & ILD

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Examination: 4 Abdomen

Common Commands:

- Examine the Abdomen
- Examine the Abdomen and see the relevant
- Just percuss and Palpate, what are your findings

Important TIP:

- Watch YouTube videos on examination, practice as much as you can along with the timer, try to perform examination in 2-3 minutes---so that you can answer the examiner questions then.

Examination of Abdomen

- If there is a sanitizer beside patient in examination, make sure to use that
- Be sure that you are **on the right side of the patient**
- At the same time say greetings, introduce yourself, take permission and explain what you are going to do.
- Check the patient is not in any pain or discomfort and ensure he/she is positioned correctly
- Note any medical equipment attached to the patient or in the bedspace
- **Position**
  - Patient should lie flat in supine position (remove any extra pillow with permission)
  - Abdomen should be exposed from inframammary region to just above the pubic symphysis (do not expose the genitalis to maintain the dignity of the patient)

Inspection	❖ Begin the examination **at the foot end of the bed and on right side of the bed** with an inspection of the following points and their surroundings, without touching the patient.
	❖ Shape of the abdomen
	  ○ Normal shape is neither protuberant nor sunken
	  ○ Sunken abdomen is seen in starvation or wasting disease such as malignancy
	  ○ Distended abdomen can be due to obesity or ascites
	  ○ Umbilicus is sunken in obesity while in ascites it everted
	❖ Movements of abdominal wall
	❖ Visible peristalsis
	❖ Visible pulsation such as in mass or aneurysm
	❖ Scar indicates previous surgery or trauma
	❖ Any Mass or hernia
	❖ Striae
	  ○ White or pink striae indicates previous pregnancy or loss of weight
	  ○ Purple striae indicate Cushing syndrome

Palpation	❖ **Enquire any pain in the abdomen** (if any examine that part in the end)
	❖ Ask the patient to tell you, if he is hurt during examination
	❖ Make sure your hands are warm
	❖ Place the palm of your right hand flat on abdominal wall for palpation
	❖ **During palpation look at the patients face**
	❖ Types of palpation:
	1. **Light palpation:**
	  ○ First perform superficial palpation, feel for rigidity or any mass
	2. **Deep palpation:**
	  ○ Now perform Deep palpation in the same sequence for light palpation and look for rigidity, tenderness or mass

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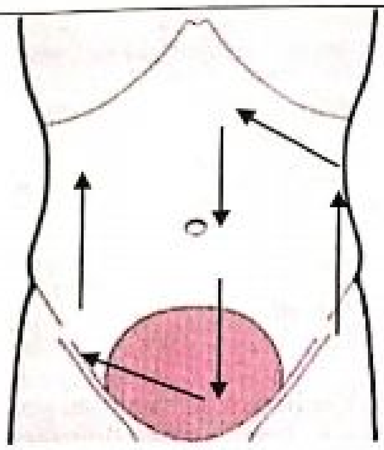
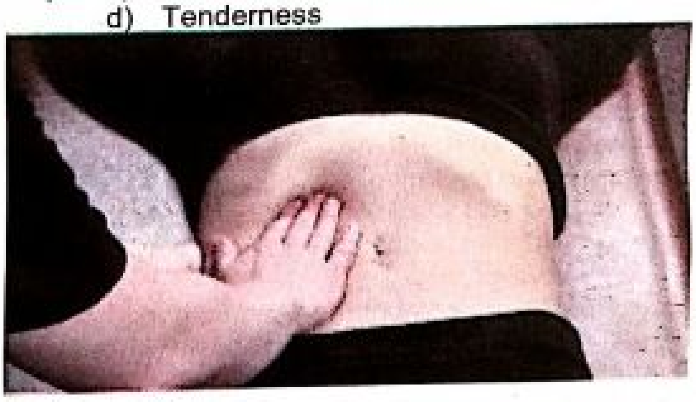


3. **Visceral palpation:**

- Liver:
  - Start from right iliac fossa, ask the patient to look at left side and take deep breath in and out
  - Right hand is placed vertically in right iliac fossa, and tips of fingers facing right costal margin.
  - Sometimes both hands can be used in obese patients
  - If liver is palpable look for the following points
    a) Measure it in cm (with tape, not with fingers)
    b) Consistency (soft, firm, hard)
    c) Surface (smooth or irregular)
    d) Tenderness



- Spleen:
  - Start from right iliac fossa, ask the patient to look at left side and take deep breath in and out
  - Right hand is placed in right iliac fossa, and tips of fingers facing left hypochondrium
  - If spleen is not palpable place your left hand over left lower ribs posteriorly –encourage the patient to breath deeply
  - If still not palpable turn the patient halfway towards right and palpate again

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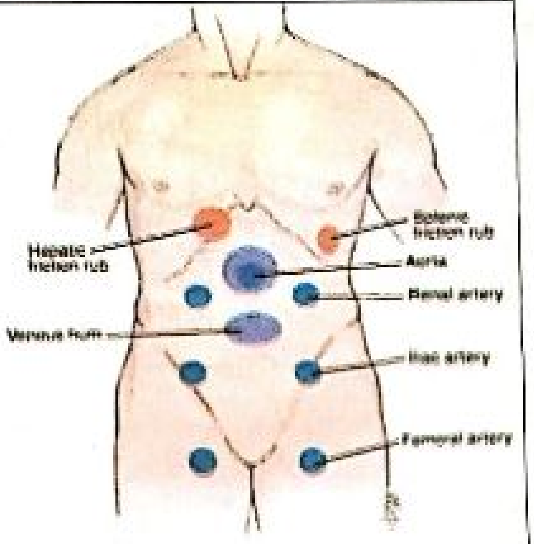
	○ Kidneys: ▪ Palpate both kidneys right and left (by ballottement) ○ Urinary bladder: ▪ Not palpable when empty ▪ In retention of urine or other causes when palpable its felt as rounded swelling in hypogastrium
Percussion	❖ Liver: ✓ For lower border of liver start percussing from right iliac fossa upwards ✓ Normal resonant note will change into dull when the lower border of liver is encountered ✓ For upper border start percussing from right 2nd intercostal space in midclavicular line till note becomes impaired ✓ **Normal size is vertically 12-15cm** ❖ Spleen: ✓ Start percussing from right iliac fossa and percuss towards left hypochondrium. Note will change to dull when lower border of spleen encountered ❖ Urinary bladder: ✓ Percuss from the epigastrium towards hypogastrium ✓ Percussion will become dull if urinary bladder is extended ❖ Ascites: ✓ **Shifting dullness** ○ First percuss from epigastrium towards hypogastrium to find out the upper limit of dullness in midline ○ Percuss from the midline usually at the level of umbilicus towards flank ○ Normally note is resonant, if ascites is present note will become dull and ask the patient to turn towards opposite side wait for few seconds and percuss again. ○ If note becomes resonant again shifting dullness is positive and ascites is present ✓ **Fluid thrill** ○ Place your left hand over left lumbar region and tap the right lumbar region with your right hand ○ Ask the patient or an assistant to place side of his hand in the midline to dampen the transmission via fat ○ A wave or impulse if felt by left hand, fluid thrill is said to be positive
Auscultation	❖ Bowel sounds: ○ Produced by gut peristalsis ○ Best heard at the ileocecal junction ○ Normally audible every 5-10 seconds ❖ Renal Bruit: ○ Heard in lumbar region and renal angle ○ Cause: renal artery stenosis ❖ Aortic bruit: ○ Audible above and just left to left of umbilicus ○ Cause: aortic narrowing ❖ Hepatic bruit: ○ Over haptic area ○ Cause: hepatoma 

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Abdomen

Few Common Questions in Abdomen Examination

Que: 1 What are the Causes of Splenomegaly, hepatomegaly and hepatosplenomegaly?

Splenomegaly	❖ Congestive: o Cirrhosis o Thrombosis o Constrictive Pericarditis And CCF ❖ Infective o Endocarditis, enteric fever, Tuberculosis o Hepatitis o Malaria o Leishmania ❖ Inflammatory Disorders o Rheumatoid Arthritis o SLE o Sarcoidosis ❖ Hematological o Megaloblastic Anemias o Thalassemia o Polycythemia Rubra Vera o Myelofibrosis ❖ Neoplastic o Leukemia o Lymphomas o Malignancy
Hepatomegaly	Mnemonic: ---**V-CRAME** o **V**iral hepatitis o **C**irrhosis (early) o **R**ight heart failure o **A**moebic liver abscess, pyogenic liver abscess o **M**alignancy o **E**nteric fever ✚ **Note liver is tender in Hepatitis, Liver abscess and Congestive cardiac failure**
Hepatosplenomegaly	Mnemonic: ---**HEPATOSPLEnoMegaly** o **H**ematological (myeloproliferative disorders, thalassemia) o **E**nteric fever o **P**ortal hypertension o **A**myloidosis o **TO**xoplasmosis o **S**arcoidosis o **P**ernicious anemia o **LE**ishmania o **M**alaria

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Que: 2 What are the Causes & treatment of Ascites?

Definition	❖ It refers to the accumulation of excess fluid in the peritoneal cavity
Signs	❖ Abdominal distention ❖ Fluid thrill and shifting dullness to percussion
Causes	❖ **SAAG (Serum Albumin Ascitic fluid gradient) = Serum albumin – Ascites albumin** ❖ SAAG is helpful in distinguishing ascites of liver origin from ascites of peritoneal origin ❖ Ascites is called Exudative when total protein concentration > 25g/L and SAAG is < 1.1g/dL ❖ Ascites is called Transudative when total protein concentration < 25g/L and SAAG is > 1.1g/dL

Portal HTN-related ascites SAAG ≥ 1.1 g/dL	Non-Portal HTN-related ascites SAAG ≤ 1.1 g/dL
Cirrhosis	Peritonitis (e.g. TB)
Acute Hepatitis	Peritoneal carcinomatosis
Liver malignancy	Pancreatitis
Right Sided HF	Vasculitis
Budd-Chiari syndrome	Hypoalbuminemia (Nephrotic syndrome)
Splenic vein thrombosis	Meigs syndrome
Schistosomiasis	Hypothyroidism

Management

- ❖ Restriction of sodium intake to 40mmol/day i.e. no added salt diet
- ❖ Restriction of water to 1-1.5L/day only when serum sodium is less than 125mmol/L
- ❖ Avoid NSAIDS and Corticosteroids
- ❖ Diuretics:
  - o Spironolactone (Aldosterone antagonist) is the drug of choice
  - o Spironolactone starting at 100 mg daily and increased gradually to 400mg
  - o Chronic administration produces Gynaecomastia.
  - o Eplerenone 25 mg once daily does not cause Gynaecomastia.
  - o The aim of diuretic therapy should be to produce a net loss of fluid approaching 700 mL in 24 hours (0.7 -1 kg weight loss)
  - o Loop diuretic, such as furosemide 20–40 mg or bumetanide 0.5 mg is added if response is poor
- ❖ Refractory ascites and treatment:
  - o It refers to the ascites in which the patient does not respond to doses of 400mg of spironolactone and 160mg furosemide.
  - o Large Volume Paracentesis:
    - ▪ It is the first line treatment of refractory ascites
    - ▪ Removes 3-5 L per day or until dry
    - ▪ Albumin replacement (6-8 gm/L of ascites removed) to support circulation
    - ▪ It must not be performed in the presence of spontaneous bacterial peritonitis as it increases the risk for acute renal failure.
  - o Trans-Jugular intra-hepatic-portosystemic shunt (TIPSS):
    - ▪ It is also used for refractory ascites
    - ▪ No mortality benefits.

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Examination: 5 Neurological Examination Of Upper Limb

Common Commands:
- Perform the neurological examination of upper limb
- Examine the Upper limb Motor part
- Examine the Upper limb Sensory part

Important TIP:
- Watch YouTube videos on examination, practice as much as you can along with the timer, try to perform examination in 2-3 minutes---so that you can answer the examiner questions then.
- The neurological system is usually the most daunting examination, so learn and practice as much as you can at the bedside
- The only essential point is to distinguish whether weakness is upper (UMN) or lower (LMN) motor neuron

Difference between Upper and Lower Motor Neuron Lesions

- Lower motor neuron = everything lowered (less muscle mass, ↓ muscle tone, ↓ reflexes, down-going toes).
- Upper motor neuron = everything up (↑tone, ↑reflexes, Upgoing toes).
- Remember Babinski sign→ big toe goes upward, seen normally in infants, and in UMN lesions

	UMN lesion	LMN lesion
Weakness	+	+
Atrophy	–	+
Tone	↑	↓
Reflexes	↑	↓
Fasciculations	–	+
Babinski	+	–
Spastic paresis	+	–
Flaccid paralysis	–	+
Clasp knife spasticity	+	–
Sites	▪ Cerebral cortex ▪ Internal capsule ▪ Brain stem ▪ Descending tracts upto anterior horn cells of spinal cord	▪ From anterior horn cells to motor end plate (cranial or peripheral nerves)

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Neurological Examination of Upper Limb Motor system

- If there is a sanitizer beside patient, make sure to use that
- Be sure that you are **on the right side of the patient**
- At the same time say greetings, introduce yourself, take permission and explain what you are going to do.
- Ask the patient if they have any pain before proceeding with the clinical examination.
- Note any medical equipment attached to the patient or in the bed-space
- **Position**
    - Position the patient appropriately (either sitting on the side of the examination couch or lying at 45°).
    - Adequately expose the patient's arms for the examination from the shoulders to the hands

<table>
<tr><td>General Inspection

Mnemonic: SWIFT</td><td>

CLUE: if there is a urinary catheter attached or any walking aids beside the patient---it's a clue that the patient has some neurological pathology and it's not any normal patient lying to test your skills
Scars:
May provide clues regarding previous spinal, axillary or upper limb surgery.
Wasting of muscles:
Suggestive of lower motor neuron lesions or disuse atrophy.
If there is any doubt measure the distance from styloid process to a point at forearm where muscle bulk is maximum and measure the circumference of forearm at that site. Repeat the process on other side, and compare
Involuntary movements:
E.g. Chorea, Myoclonus, tardive dyskinesia
Fasciculations:
Small, local, involuntary muscle contraction and relaxation which may be visible under the skin. Associated with lower motor neuron pathology (e.g. Amyotrophic lateral sclerosis).
If not visible or in doubt can be elicited or check by light percussion.
Tremor:
There are several subtypes including resting tremor and intention tremor.
</td></tr>
<tr><td>Tone</td><td>

It is defined as the resistance felt when joint is moved passively
Assess tone in the muscle groups of the shoulder, elbow and wrist on BOTH arms and compare both arms
Use your one arm to asses and other to support the patient's arm by holding their elbow.
Ask the patient to relax and allow you to fully control the movement of their arm.
Move the muscle groups of the shoulder (circumduction), elbow (flexion/extension) and wrist (circumduction) through their full range of movements.
Feel for abnormalities of tone as you assess each joint (e.g. spasticity, rigidity, cogwheeling, hypotonia).
Spasticity vs Rigidity (Both are hypertonia---Signs of UMN lesion)
Spasticity and rigidity both involve increased tone, so it's important to understand how to differentiate them clinically

<table>
<tr><th>• Spasticity</th><th>• Rigidity</th></tr>
<tr><td>• Spasticity is "velocity-dependent", meaning the faster you move the limb, the worse it is. There is typically increased tone in the initial part of the movement which then suddenly reduces past a</td><td>• Rigidity is "velocity independent" meaning it feels the same if you move the limb rapidly or slowly. There are two main sub-types of rigidity:</td></tr>
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certain point (known as "clasp knife spasticity"). ▪ Spasticity is also typically accompanied by weakness.	▪ **Cogwheel rigidity** involves a tremor superimposed on the hypertonia, resulting in intermittent increases in tone during movement of the limb. This subtype of rigidity is associated with Parkinson's disease. ▪ **Lead pipe rigidity** involves uniformly increased tone throughout the movement of the muscle. It occurs in lesions of basal ganglia.

- **Hypotonia---Sign of LMN lesion**
  - Very difficult to distinguish hypotonia from good relaxation, hypotonia occurs in
  - LMN lesion
  - Cerebellar dysfunction

Power

- You must stabilize and isolate the relevant joint for each assessment to ensure you can accurately measure and compare muscle strength.
- At each stage in the assessment, you should compare like for like.
- Use the MRC muscle power assessment scale for scoring muscle strength (details below).

- **Shoulder**
  - Shoulder Abduction
    - Myotome assessed: C5 (axillary nerve)
    - Muscles assessed: deltoid (primary) and other shoulder abductors
    - Instructions:
      - ➢ Ask the patient to flex their elbows and ABduct their shoulders to 90°: "Bend your elbows and bring your arms out to the sides like a chicken."
      - ➢ Apply downward resistance on the lateral side of the upper arm whilst asking the patient to maintain their arm's position: "Don't let me push your shoulder down."
  - Shoulder Adduction
    - Myotomes assessed: C6/7 (thoracodorsal nerve)
    - Muscles assessed: teres major, latissimus dorsi and pectoralis major
    - Instructions:
      - ➢ Ask the patient to ADduct their shoulders to 45° bringing their elbows closer to their body: "Now bring your elbows a little closer to your sides."
      - ➢ Apply upward resistance on the medial side of the upper arm whilst asking the patient to maintain their arm's position: "Don't let me pull your arms away from your sides."

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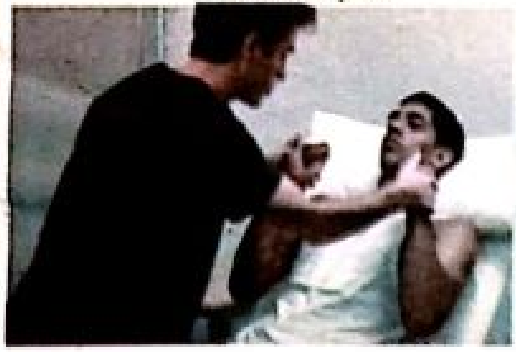
- **Elbow**
  - Elbow flexion
    - Myotomes assessed: C5/6 (musculocutaneous and radial nerve)
    - Muscles assessed: biceps brachii, coracobrachialis and brachialis
    - Instructions:
      - Ask the patient to flex their elbow: "Put your hands up like a boxer."
      - Apply resistance by pulling the forearm whilst stabilising the shoulder joint: "Don't let me pull your arm away from you."
  - Elbow extension
    - Myotome assessed: C7 (radial nerve)
    - Muscles assessed: triceps brachii
    - Instructions:
      - With the patient's elbows still in the flexed position, apply resistance by pushing the forearm towards the patient whilst stabilising the shoulder joint: "Don't let me push your arm towards you."



- **Wrist**
  - Wrist extension
    - Myotome assessed: C6 (radial nerve)
    - Muscles assessed: extensors of the wrist
    - Instructions:
      - Ask the patient to hold their arms out in front of them with their palms facing downwards: "Hold your arms out in front of you, with your palms facing the ground."
      - Ask the patient to make a fist and extend their wrist joints, keeping their wrists in this position whilst you apply resistance: "Make a fist, cock your wrists back and don't let me pull them downwards."
  - Wrist flexion
    - Myotomes assessed: C6/7 (median nerve)
    - Muscles assessed: flexors of the wrist

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Upper Limb

- Instructions:
  - With the patient still holding their arms out in front of them, now ask them to flex their wrist joints and keep them in this position whilst you apply resistance: "Ok now point your wrists downwards and don't let me pull them up."

❖ **Small Muscles of Hand**

- Abduction of fingers
  - Muscles assessed: First dorsal interosseous (FDI) & Abductor digiti minimi (ADM)
  - Instruction: Splay your fingers out and Stop me from pulling your fingers together

- Flexors of finger
  - Override your index and middle fingers.
  - Ask the patient to squeeze them, while you pull to freem them

- Extensors of fingers
  - Ask the patient to open fist against resistance

- Thumb ABduction
  - Muscle assessed: abductor pollicis brevis

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Patterns of muscle weakness

- Upper motor neuron lesions cause a 'pyramidal' pattern of weakness (i.e. upper limb extensors are weaker than flexors in an upper limb neurological assessment).
- Lower motor neuron lesions cause a focal pattern of weakness, with only the muscles directly innervated by the damaged neurones affected.

Grades of Power

Grade 0	Complete paralysis
Grade 1	A flicker of contraction only
Grade 2	Pateint can move his limb when gravity is excluded e.g moving limbs horizontally on bed
Grade 3	Patient can move limbs against gravity but not agasint resistance
Grade 4	Patient can move against resistance but power is less than normal
Grade 5	Normal power

Reflexes

- Explain to the patient that you are now going to assess their reflexes by tapping gently on their arm with a tendon hammer (it is useful to show the patient the tendon hammer at this stage).
- For each of the reflexes, the patient's upper limb needs to be completely relaxed.
- Make sure to hold the tendon hammer handle at its end to allow gravity to aid a good swing.
- If a reflex appears absent make sure the patient is fully relaxed and then **perform a reinforcement maneuver by asking the patient to clench their teeth together whilst you simultaneously tap the tendon.**

- **Biceps reflex (C5/6)**
  - With the patient's arm relaxed, locate the biceps brachii tendon
  - Place the thumb of your non-dominant hand over the tendon and then tap your thumb with the tendon hammer.
  - Observe for a contraction of the biceps muscle and associated flexion of the elbow.

- **Supinator (brachioradialis) reflex (C5/6)**
  - Locate the brachioradialis tendon
  - With finger positioned over the tendon, tap your fingers with the tendon hammer.
  - Observe for a contraction of the brachioradialis muscle and associated flexion, pronation or supination of the forearm at the elbow.

- **Triceps reflex (C7)**
  - Position the patient's arm so that the triceps tendon is relaxed: this is commonly achieved by resting the patient's elbow in 90° flexion on their lap or by supporting the patient's forearm.

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	o Locate the triceps tendon, which can be found superior to the olecranon process of the ulna. o Tap the tendon with the tendon hammer and observe for a contraction of the triceps muscle. **Hyperreflexia vs hyporeflexia** ❖ Hyperreflexia is typically associated with upper motor neuron lesions (e.g. stroke, spinal cord injury) due to the loss of disinhibition from higher brain centers which normally exert a degree of suppression over the lower motor neuron reflex arc. ❖ Hyporeflexia is typically associated with lower motor neuron lesions (e.g. brachial plexus pathology or other peripheral nerve injuries) due to the loss the efferent and afferent branches of the normal reflex arc. ❖ In cerebellar disease, reflexes are described as 'pendular', which means less brisk and slower in their rise and fall. This sign is, however, very subjective and often reflexes appear to be 'normal' in cerebellar disease.
Coordination	❖ **Finger-to-nose test** o Position your finger so that the patient has to fully outstretch their arm to reach it. o Ask the patient to touch their nose with the tip of their index finger and then touch your fingertip. o Ask the patient to continue to do this finger to nose motion as fast as they are able to. o Interpretation ▪ When patients with cerebellar pathology perform this task they may exhibit both dysmetria and intention tremor: ▪ Dysmetria: refers to a lack of coordination of movement. Clinically this results in the patient missing the target by over/undershooting. ▪ Intention tremor: a broad, coarse, low-frequency tremor that develops as a limb reaches the endpoint of a deliberate movement. Clinically this results in a tremor that becomes apparent as the patient's finger approaches yours. Be careful not to mistake an action tremor (which occurs throughout the movement) for an intention tremor. ▪ The presence of dysmetria and intention tremor is suggestive of ipsilateral cerebellar pathology ❖ **Dysdiadochokinesia** o Dysdiadochokinesia is a term that describes the inability to perform rapid, alternating movements, which is a feature of ipsilateral cerebellar pathology. o Ask the patient to place their left palm on top of their right palm. o Then ask them to turn over their left hand and touch the back of it onto their right palm. o Ask the patient to now repeat this sequence of movements as fast as they are able until you tell them to stop. o Repeat the assessment with the other hand. o Interpretation ▪ Patients with cerebellar ataxia may struggle to carry out this task, with their movements appearing slow and irregular. The presence of dysdiadochokinesia suggests ipsilateral cerebellar pathology.
Ending The Examination	❖ Explain to the patient that the examination is now finished. ❖ **Thank the patient for their time and cover the patient**

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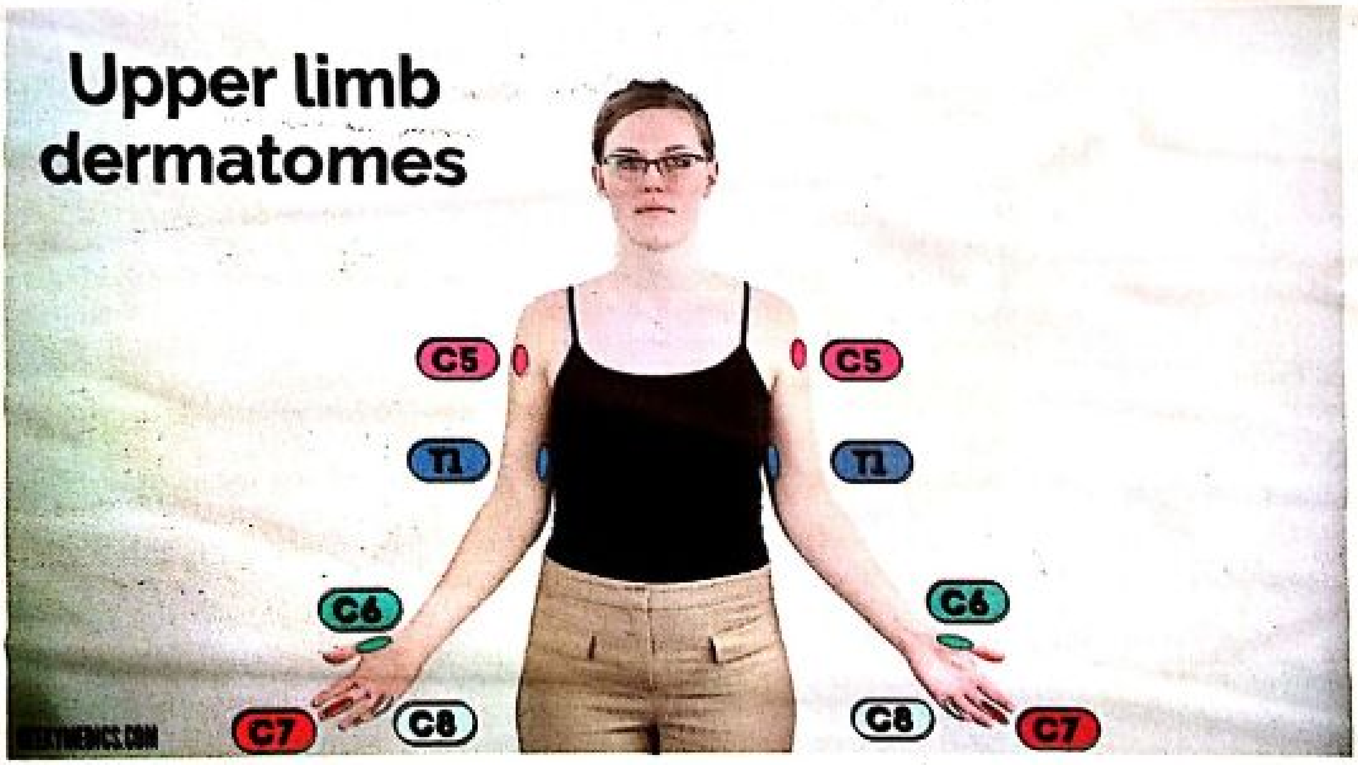
Neurological Examination of Upper Limb Sensory system

- If there is a sanitizer beside patient, make sure to use that
- Be sure that you are **on the right side of the patient**
- At the same time say greetings, introduce yourself, take permission and explain what you are going to do.
- Note any medical equipment attached to the patient or in the bed-space
- **Position**
    - Position the patient appropriately (either sitting on the side of the examination couch or lying at 45°).
    - Adequately expose the patient's arms for the examination from the shoulders to the hands
- **Spinal Cord Tracts**
    - Dorsal (Posterior) column tract---carries Pressure, vibration, fine touch, proprioception
    - Lateral spinothalamic tract – carries Pain, Temperature
- **Dermatomes**
    - Here are some locations you can use to assess each of the upper limb dermatomes:



General rules	- Explain to the patient what you are going to do and how he should respond - **Apply stimulus to normal site like sternum first**, so that he can experience the normal sensation - Compare two sides and ask the patient whether the sensation is equal in both sides or not - Sensation may be completely lost (Anesthesia), impaired (hypoesthesia) and heightened (dysesthesia)
Touch	- Touch the skin with small cotton wool---first experience it to the patient normal sensation on sternum first - **Ask the patient to close his eyes and say yes when he feels touching the object** - Then start touching at all dermatomes mentioned above—and compare each side at each dermatome.
Pain	- Touch the patient with pointed end as sharp and dull end---make him experience both as sharp and dull at normal site first preferable sternum - **Ask the patient to close his eyes and say yes when he feels touching the object sharp**

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	❖ Then start touching at all dermatomes mentioned above—and compare each side—first right— then left — at each dermatome ❖ If patient can feel but cannot distinguish between sharp and blunt, it means his sense of touch is intact but sense of pain is lost
Temperature	❖ Examine it with cold metallic object like tuning fork ❖ No need to check all dermatomes—examine at few places of dermatome and ask the patient whether he feels it cold or not, and compare each side
Sense of vibration	❖ Now use the flat base of tuning fork to test vibration sense ❖ For setting it into vibration, strike it on your knee or elbow ❖ At first place the base of vibrating and still tuning fork on sternum or forehead so that patient can experience vibrations ❖ Then ask the patient to close the eyes, place the tuning fork on distal bony prominences—sometimes vibrating and sometimes still and ask him to indicate when vibrations are felt——compared and test both sides——if abnormal then test at wrist and elbow and so on
Proprioception	❖ Begin assessment of proprioception at the interphalangeal joint of the thumb by holding the distal phalanx of the thumb by its sides (avoid holding the nail bed as this can allow the patient to determine direction based on pressure) ❖ Demonstrate movement of the thumb "upwards" and "downwards" to the patient whilst they watch ❖ Ask the patient to close their eyes and state if you are moving their thumb up or down ❖ Move the thumb up or down 3-4 times in a random sequence to see if the patient is able to accurately identify joint position with their eyes closed ❖ If the patient is unable to correctly identify the direction of movement, continue to sequentially assess more proximal joints (e.g. carpometacarpal joint of the thumb → wrist → elbow → shoulder)
Two Point Discrimination	❖ Special calibrated divider is used for this purpose—open the divider and touch the patient with one or both points—and ask the patient whether it is one or two sites he is being touched ❖ Touch and test both middle fingers and thumb to determine the minimum separation ❖ If the distance is more than 5mm on pulp of fingers it is abnormal
Stereognosis	❖ Ask the patient to close eyes ❖ Give him different objects like coin, key etc. to identify ❖ This ability is lost in sensory cortex lesion
Graphesthesia	❖ Draw a number on patient palm with blunt object and eyes closed ❖ This ability is lost in sensory cortex lesion
Ending the Examination	❖ Explain to the patient that the examination is now finished ❖ Thank the patient for their time and cover the patient

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Examination: 6 Neurological Examination Of Lower Limb

Common Commands:

- Perform the neurological examination of Lower limb
- Examine the Lower limb Motor part
- Examine the Lower limb Sensory part

Important TIP:

- Watch YouTube videos on examination, practice as much as you can along with the timer, try to perform examination in 2-3 minutes---so that you can answer the examiner questions then.
- The neurological system is usually the most daunting examination, so learn and practice as much as you can at the bedside
- The only essential point is to distinguish whether weakness is upper (UMN) or lower (LMN) motor neuron

Neurological Examination of Lower Limb Motor system

- If there is a sanitizer beside patient, make sure to use that
- Be sure that you are **on the right side of the patient**
- At the same time say greetings, introduce yourself, take permission and explain what you are going to do.
- Ask the patient if they have any pain before proceeding with the clinical examination.
- Note any medical equipment attached to the patient or in the bed-space
- **Position**
  - Position the patient appropriately on an examination couch (typically with the headrest elevated to 30-45°).
  - Adequately expose the patient's legs for the examination.

General Inspection ***Mnemonic:*** **SWIFT**	❖ **CLUE: If there is a urinary catheter attached or any walking aids beside the patient---it's a clue that the patient has some neurological pathology and it's not any normal patient lying to test your skills** ❖ Scars: o May provide clues regarding previous spinal, axillary or upper limb surgery. ❖ Wasting of muscles: o Suggestive of lower motor neuron lesions or disuse atrophy. o If there is any doubt measure the distance from medial malleolus to a point at calf where muscle bulk is maximum and measure circumference at the site. Repeat the same process on other side and compare. ❖ Involuntary movements: o E.g. Chorea, Myoclonus, tardive dyskinesia ❖ Fasciculations: o Small, local, involuntary muscle contraction and relaxation which may be visible under the skin. Associated with lower motor neuron pathology (e.g. Amyotrophic lateral sclerosis). o If not visible or in doubt can be elicited or check by light percussion. ❖ Tremor: o There are several subtypes including resting tremor and intention tremor.

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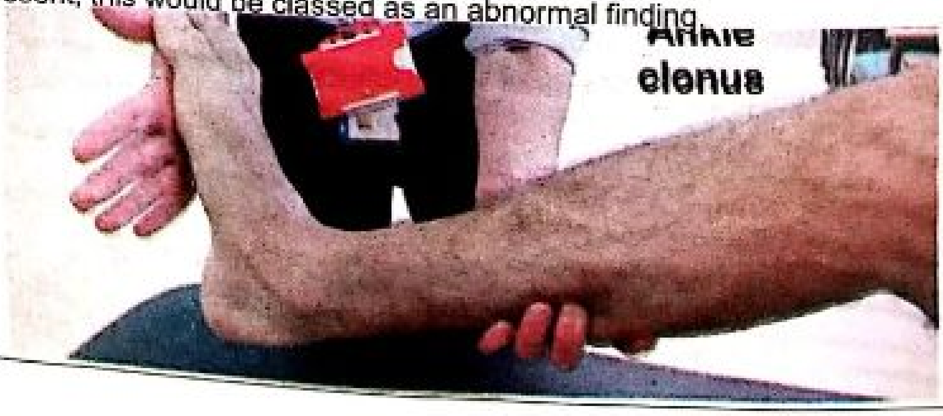
Tone

- It is defined as the resistance felt when joint is moved passively
- Assess tone in the muscle groups of the hip, knee and ankle on each leg, comparing each side as you go. Ask the patient to keep their legs fully relaxed throughout the assessment.
- **Leg Roll**
  - With the patient lying on the examination couch, roll each leg to assess tone in the muscles responsible for the rotation of the hip.

- **Leg Lift**
  - Lift each knee briskly off the bed (warning the patient first) and observe the movement of the leg. In patients with normal tone, the knee should rise whilst the heel remains in contact with the bed (the heel will typically lift off the bed if there is increased tone).

- **Ankle clonus**
  - *Clonus* is a series of involuntary rhythmic muscular contractions and relaxations that is associated with upper motor neuron lesions of the descending motor pathways (e.g. stroke, multiple sclerosis, cerebral palsy).
  - Position the patient's leg so that the knee and ankle are slightly flexed, supporting the leg with your hand under their knee, so they can relax.
  - Rapidly dorsiflex and partially evert the foot to stretch the gastrocnemius muscle.
  - Keep the foot in this position and observe for clonus. Clonus is felt as rhythmic beats of dorsiflexion and plantarflexion. If more than 5 beats of clonus are present, this would be classed as an abnormal finding.



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	❖ **Spasticity vs Rigidity (Both are hypertonia---Signs of UMN lesion)** o Spasticity and rigidity both involve increased tone, so it's important to understand how to differentiate them clinically

▪ **Spasticity**	▪ **Rigidity**
▪ Spasticity is "velocity-dependent", meaning the faster you move the limb, the worse it is. There is typically increased tone in the initial part of the movement which then suddenly reduces past a certain point (known as "clasp knife spasticity"). ▪ Spasticity is also typically accompanied by weakness.	▪ Rigidity is "velocity independent" meaning it feels the same if you move the limb rapidly or slowly. There are two main sub-types of rigidity: ▪ **Cogwheel rigidity** involves a tremor superimposed on the hypertonia, resulting in intermittent increases in tone during movement of the limb. This subtype of rigidity is associated with Parkinson's disease. ▪ **Lead pipe rigidity** involves uniformly increased tone throughout the movement of the muscle. It occurs in lesions of basal ganglia.

❖ **Hypotonia---Sign of LMN lesion**
- o Very difficult to distinguish hypotonia from good relaxation, hypotonia occurs in
  - ▪ LMN lesion
  - ▪ Cerebellar dysfunction

Power

- ❖ You must stabilize and isolate the relevant joint for each assessment to ensure you can accurately measure and compare muscle strength.
- ❖ At each stage in the assessment, you should compare like for like.
- ❖ Use the MRC muscle power assessment scale for scoring muscle strength (details below).

❖ **Hip**
- o <u>Hip Flexion</u>
  - ▪ Myotome assessed: L1/2 (iliofemoral nerve)
  - ▪ Muscles assessed: iliopsoas
  - ▪ Instructions:
    - ➢ Ask the patient to raise their leg off the bed and apply downward resistance over the anterior thigh: "Lift your leg off the bed and don't let me push your leg down."

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- Hip Extension
  - Myotome assessed: L5/S1 (sciatic nerve)
  - Muscles assessed: gluteus maximus
  - Instructions:
    - ➢ Place your hand under the patient's thigh and ask them to resist you trying to lift their leg: "Don't let me lift your leg off the bed."

❖ **Thigh**

- Adductors of Thigh
  - Instructions:
    - ➢ Place your right hand on medial side of the leg. Ask the patient to bring abducted limbs towards midline against resistance.

- Abductors of Thigh
  - Instructions:
    - ➢ Place your right hand on lateral side of the leg. Ask the patient to separate them against resistance.

❖ **Knee**

- Knee flexion
  - Myotome assessed: S1 (sciatic nerve)
  - Muscles assessed: hamstrings
  - Instructions:
    - ➢ Ask the patient to flex their knee so that their foot is flat on the bed and then apply resistance by pulling the lower leg towards you: "Bend your knee so that your foot is flat on the bed and then don't let me pull your leg towards me."

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- Knee extension
  - Myotome assessed: L3/4 (femoral

nerve)
  - Muscles assessed: quadriceps
  - Instructions:
    - ➢ With the patient's knee still flexed, position your hand over the anterior portion of the lower leg and ask the patient to try and straighten their leg: "Try and straighten your leg whilst I try to stop you."

❖ **Ankle**
- Ankle Dorsiflexion
  - Myotome assessed: L4/5 (deep peroneal nerve)
  - Muscles assessed: tibialis anterior
  - Instructions:
    - ➢ Ask the patient to position their legs flat on the bed, dorsiflex their foot and resist you trying to push their foot downwards: "Put your legs flat on the bed, cock your foot backwards and don't let me push your foot down."

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- Ankle Plantarflexion
  - Myotome assessed: S1/2 (tibial nerve)
  - Muscles assessed: gastrocnemius, soleus
  - Instructions:
    - With the patient's legs still flat on the bed, ask them to plantarflex their foot and resist you trying to pull their foot upwards: "Point your foot downwards like you're pushing a car pedal and don't let me pull it up."

- **Big Toe**
  - Big toe extension
    - Myotome assessed: L5 (deep peroneal nerve)
    - Muscles assessed: extensor hallucis longus
    - Instructions:
      - With the patient's legs still flat on the bed, ask them to extend their big toe and resist you trying to push it down: "Point your big toe up towards your head and don't let me push it down."

Patterns of muscle weakness

- Upper motor neuron lesions cause a 'pyramidal' pattern of weakness (i.e. upper limb extensors are weaker than flexors in an upper limb neurological assessment).

- Lower motor neuron lesions cause a focal pattern of weakness, with only the muscles directly innervated by the damaged neurones affected.

Grades of Power

Grade 0	Complete paralysis
Grade 1	A flicker of contraction only
Grade 2	Pateint can move his limb when gravity is excluded e.g moving limbs horizontally on bed
Grade 3	Patient can move limbs against gravity but not agasint resistance
Grade 4	Patient can move against resistance but power is less than normal
Grade 5	Normal power

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Reflexes	❖ Explain to the patient that you are now going to assess their reflexes by tapping gently on their legs with a tendon hammer (it is useful to show the patient the tendon hammer at this stage). ❖ For each of the reflexes, the patient's lower limb needs to be completely relaxed. ❖ Make sure to hold the tendon hammer handle at its end to allow gravity to aid a good swing. ❖ If a reflex appears absent make sure the patient is fully relaxed and then **perform a reinforcement maneuver by asking the patient to clench their teeth together whilst you simultaneously tap the tendon.** ❖ **Knee Jerk (L3, L4)** ▪ Patient should lie supine. ▪ Flex the knee and support it with your left hand. ▪ Feel for the tendon of Quadriceps and strike it between the patella and tuberosity with the hammer. ▪ Look for the contraction of the Quadriceps. ▪ **Check in both legs** ❖ **Ankle Jerk (S1, S2)** ▪ Flex the leg slightly and place it an externally rotated position. ▪ Place your left hand on sole of foot and dorsiflex it. ▪ Strike the Achilles tendon with the hammer. ▪ Look for contraction of Calf muscles ▪ **Check in both legs** **<u>Hyperreflexia vs hyporeflexia</u>** ❖ Hyperreflexia is typically associated with upper motor neuron lesions (e.g. stroke, spinal cord injury) due to the loss of disinhibition from higher brain centers which normally exert a degree of suppression over the lower motor neuron reflex arc. ❖ Hyporeflexia is typically associated with lower motor neuron lesions ❖ In cerebellar disease, reflexes are described as 'pendular', which means less brisk and slower in their rise and fall. This sign is, however, very subjective and often reflexes appear to be 'normal' in cerebellar disease. ❖ **Superficial Reflexes.** ○ **<u>Plantar Reflex (S1)</u>** ▪ Scratch the outer edge of the sole of foot with some blunt object like a key, starting from the heel towards little toe and then medially across the metatarsals ▪ **<u>Normal Response or Down-going plantars or negative Babinski sign</u>** ➢ Normal response is plantar flexion of the great toe along with flexion and adduction of the other toes ▪ **Extensor Plantar or Up Going plantar or Positive Babinski sign** ➢ There is extension (dorsiflexion) of the great toe (usually accompanied by fanning of the other toes)

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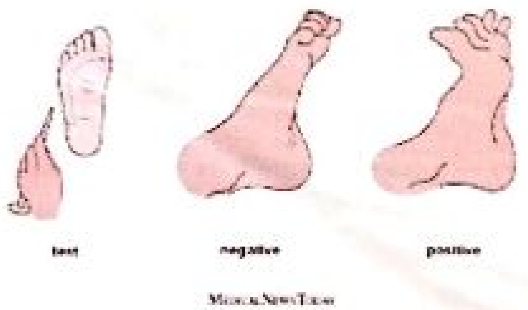
The Babinski Reflex



Causes of Upgoing plantar

- UMN lesion
- Hypoglycemia
- Deep coma
- Post epileptic fit
- Below the age of one year

Other methods to elicit or check upgoing plantars

- Oppenheim's sign:
  - Elicited by rubbing over the crest of tibia
- Gordens Reflex
  - Elicited by pinching the Achilles tendon

Coordination

- **Heel Knee Test**
  - Ask the patient to place their left heel on their right knee and then run it down their shin in a straight line.
  - Then ask them to return their left heel to the starting position over the right knee.
  - Now ask them to repeat this sequence of movements in a smooth motion until you tell them to stop.
  - Repeat the assessment with the right heel on the left leg.
  - Movements are clumsy and jerky if coordination is lost.

- **Heel-toe test of Gait (Tandem Walking)**
  - Ask the patient to walk along a straight line so that the heel of one foot comes directly in contact with the toes of other foot
  - The rare foot is then advance so that its heel is then placed in front of the previously front foot
  - Interpretation:
    - Patient with cerebellar dysfunction is unable to do so and tends to fall towards diseased side
- **Romberg's sign**
  - Ask the patient to stand erect with feet's together and eyes closed
  - Stand Close by as a precaution in order to save the person from falling
  - Interpretation:

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	• Romberg's test is used to assess for loss of proprioceptive or vestibular function (known as sensory ataxia). The test does not assess cerebellar function and instead is used to quickly screen for evidence of sensory ataxia (i.e. non-cerebellar causes of balance issues).
Gait	❖ Ask the patient to walk to the end of the examination room and then turn and walk back whilst you observe their gait paying attention to: ❖ **Gait abnormalities** ○ Drunken Gait ▪ Patient walks on a broad base in a reeling manner. ▪ This occurs in cerebellar lesion ○ Parkinsonian Gait: ▪ Small, shuffling steps, stooped posture and reduced arm swing (initially unilateral). The patient will require several small steps to turn around. The gait appears rushed (festinating) and may get stuck (freeze). Hand tremor may also be noticeable. ○ High-Stepping Gait: ▪ Can be unilateral or bilateral and is typically caused by foot drop (weakness of ankle dorsiflexion). ▪ Patient lift the foot high to clear the toes from the front and then returns it with a loud slapping noise ○ Waddling Gait: ▪ The body sways from side to side as each step is taken. ▪ Waddling gait is commonly caused by proximal lower limb weakness (e.g. myopathy). ○ Spastic Gait ▪ This is seen in UMN paraplegia ▪ Patient does not lift his feet from the ground completely so that toes remain in contact with the ground ▪ Legs swing outward and forward in a circular fashion. ▪ **Hemiplegic gait** is a spastic gait in which only one leg is affected
Ending The Examination	❖ Explain to the patient that the examination is now finished. ❖ **Thank the patient for their time and cover the patient**

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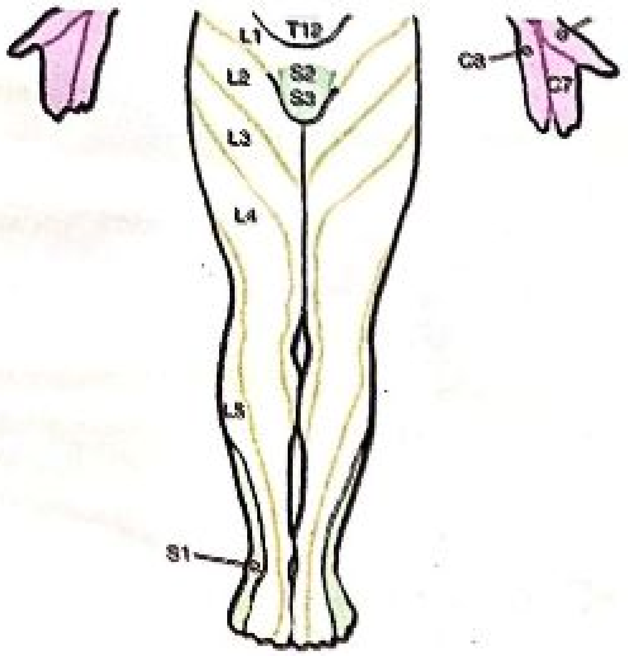
Lower Limb

Neurological Examination of Lower Limb Sensory system

- If there is a sanitizer beside patient, make sure to use that
- Be sure that you are **on the right side of the patient**
- At the same time say greetings, introduce yourself, take permission and explain what you are going to do
- Note any medical equipment attached to the patient or in the bed-space
- **Position**
  - Position the patient appropriately on an examination couch (typically with the headrest elevated to 30-45°).
  - Adequately expose the patient's legs for the examination.
- **Spinal Cord Tracts**
  - Dorsal (Posterior) column tract---carries Pressure, vibration, fine touch, proprioception
  - Lateral spinothalamic tract – carries Pain, Temperature
- **Dermatomes**
  - Here are some locations you can use to assess each of the upper limb dermatomes:



General rules	- Explain to the patient what you are going to do and how he should respond - **Apply stimulus to normal site like sternum first**, so that he can experience the normal sensation - Compare two sides and ask the patient whether the sensation is equal in both sides or not - Sensation may be completely lost (Anesthesia), impaired (hypoesthesia) and heightened (dysesthesia)
Touch	- Touch the skin with small cotton wool---first experience it to the patient normal sensation on sternum first - **Ask the patient to close his eyes and say yes when he feels touching the object** - Then start touching at all dermatomes mentioned above—and compare each side at each dermatome.
Pain	- Touch the patient with pointed end as sharp and dull end---make him experience both as sharp and dull at normal site first preferable sternum - **Ask the patient to close his eyes and say yes when he feels touching the object sharp** - Then start touching at all dermatomes mentioned above—and compare each side at each dermatome - If loss of sensation is noted distally, test for "stocking" distribution of sensory loss (associated with peripheral neuropathy) by moving distal to proximal.

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Temperature	❖ Examine it with cold metallic object like tuning fork ❖ No need to check all dermatomes—examine at few places of dermatome and ask the patient whether he feels it cold or not, and compare each side
Sense of vibration	❖ Now use the flat base of tuning fork to test vibration sense ❖ For setting it into vibration, strike it on your knee or elbow ❖ At first place the base of vibrating and still tuning fork on sternum or forehead so that patient can experience vibrations. ❖ Then ask the patient to close the eyes, place the tuning fork on patients big toe----compared and test both sides-------if abnormal then test at ankle and knee joint
Proprioception	❖ Begin assessment of proprioception at the interphalangeal joint of the big toe by holding the distal phalanx of the big toe by its sides (avoid holding the nail bed as this can allow the patient to determine direction based on pressure). ❖ Demonstrate movement of the big toe "upwards" and "downwards" to the patient whilst they watch. ❖ Ask the patient to close their eyes and state if you are moving their big toe up or down. ❖ Move the big toe up or down 3-4 times in a random sequence to see if the patient is able to accurately identify joint position with their eyes closed. ❖ If the patient is unable to correctly identify the direction of movement, continue to sequentially assess more proximal joints (e.g. ankle joint, knee joint).
Ending the Examination	❖ Explain to the patient that the examination is now finished. ❖ Thank the patient for their time and cover the patient

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Lower Limb

Few Common Questions in Neurology Examination

Que: 1 Whether the patient has spastic paraplegia or Flaccid paraplegia

Spastic paralysis	Flaccid Paralysis
❖ Upper motor neuron lesion ❖ Hyperactive deep tendon reflexes ❖ Clonus ❖ Positive Babinski sign ❖ Absence of muscle atrophy	❖ Lower motor neuron lesion ❖ Hyporeflexia ❖ Muscle wasting is a prominent feature ❖ Hypotonia
❖ Causes: 7T's ○ Trauma ○ Tuberculosis (Pott disease) ○ Tumor ○ Transverse Myelitis ○ Tabes Dorsalis ○ Twelve (B12 deficiency) ○ Thrombosis ○ Motor neuron disease	❖ Causes: ○ Motor neuron disease ○ Poliomyelitis ○ GBS ○ Myasthenia gravis ○ Lambert-Eaton myasthenic syndrome

Que: 2 What is Multiple sclerosis?

Definition	❖ Autoimmune inflammation and demyelination of CNS (brain and spinal cord).
Epidemiology	❖ Most often affects women in their 20s and 30s
Clinical features	❖ Symptoms may exacerbate with increased body temperature (eg. hot bath, exercise). ❖ Relapsing and remitting is most common clinical course. ❖ Charcot triad of MS is a **SIN**: ○ **S**canning speech ○ **I**ntention tremor (also **I**ncontinence and **I**nternuclear ophthalmoplegia "INO") ○ **N**ystagmus ❖ Other features: ○ Visual: ▪ Optic neuritis (sudden loss of vision resulting in Marcus Gunn pupils) ▪ Optic atrophy ▪ INO ○ Sensory: ▪ Pins/needles and numbness, Sensory symptoms lasting for weeks are common in MS ▪ Trigeminal neuralgia ▪ Lhermitte's syndrome: Neck flexion may precipitate sensation of electric shock running down spine ○ Motor: ▪ Spastic weakness: most commonly seen in the legs, ▪ Intentional tremors ▪ Urinary incontinence
Investigations	❖ Diagnosis requires demonstration of lesions **disseminated** in time and space ❖ MRI (Gold standard) ○ High signal T2 lesions, **periventricular plaques** ❖ CSF: ○ **Oligoclonal bands** (and not in serum) ○ Increased intrathecal synthesis of IgG ❖ Visual evoked potentials: VEP ○ Delayed, but well preserved waveform
Management	❖ There is no cure.

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	❖ Treatment is focused at reducing the frequency and duration of relapses. ❖ Acute relapse: High dose IV steroids (methylprednisolone for 3-5 days) ❖ Disease modifying therapies (β-interferon, glatiramer, natalizumab) ✓ β-interferon: (Criteria for use) ▪ Has had more than two separate episodes within the last two years ▪ Is more than 18-years-old, and ▪ Can walk more than 100 metres. o β-interferon 1a--- relapsing-remitting MS o β-interferon 1b--- relapsing remitting and secondary progressive o Contraindications: **uncontrolled epilepsy, severe clinical depression, hepatic dysfunction** ✓ Natalizumab: ❖ Mitoxantrone: reserved for **high frequency relapse** rates unresponsive to beta interferon ❖ Spasticity: o first line → Baclofen and gabapentin o Other options include→ diazepam, dantrolene and tizanidine ❖ Pain: (TCAs, anticonvulsants) ❖ Plasma exchange: severe function or life threatening relapses not responding to conventional treatment.
Good prognostic factors	❖ Young age, Female sex ❖ Relapsing remitting disease ❖ Sensory symptoms ❖ Long interval between first 2 relapses

Que: 3 Parkinsonism

Parkinson Disease	❖ ↓ Dopamine ❖ This disease appears clinically most often after 50 years of age ❖ Loss of dopaminergic neurons (i.e. depigmentation) of substantia nigra ❖ Damaged cells contain highly characteristic eosinophilic intracytoplasmic inclusions **(Lewy bodies).** ❖ Clinical features: (Mnemonic: Parkinson **TRAPS** your body) o ***Tremor (pill-rolling tremor at rest)*** o ***Rigidity (cogwheel)*** o ***Akinesia (or bradykinesia)*** o Postural instability o Shuffling gait ❖ Causes: o Idiopathic (most common) o Trauma, especially repeated trauma, as may occur in boxers. o Drugs and toxins, especially dopamine antagonists such as **MPTP (methyl-phenyltetrahydropyridine)**→ a contaminant in illegal street drugs. o **Shy-Drager syndrome**→ parkinsonism with autonomic dysfunction and orthostatic hypotension ❖ Management: o Dopamine receptor agonists (Bromocriptine, cabergoline) ✓ Side effects: **pulmonary, retroperitoneal and cardiac fibrosis** o Levodopa ✓ Usually combined with a decarboxylase inhibitor (e.g. carbidopa or benserazide) to prevent peripheral metabolism of L-dopa to dopamine ✓ Reduced effectiveness with time (usually by 2 years)

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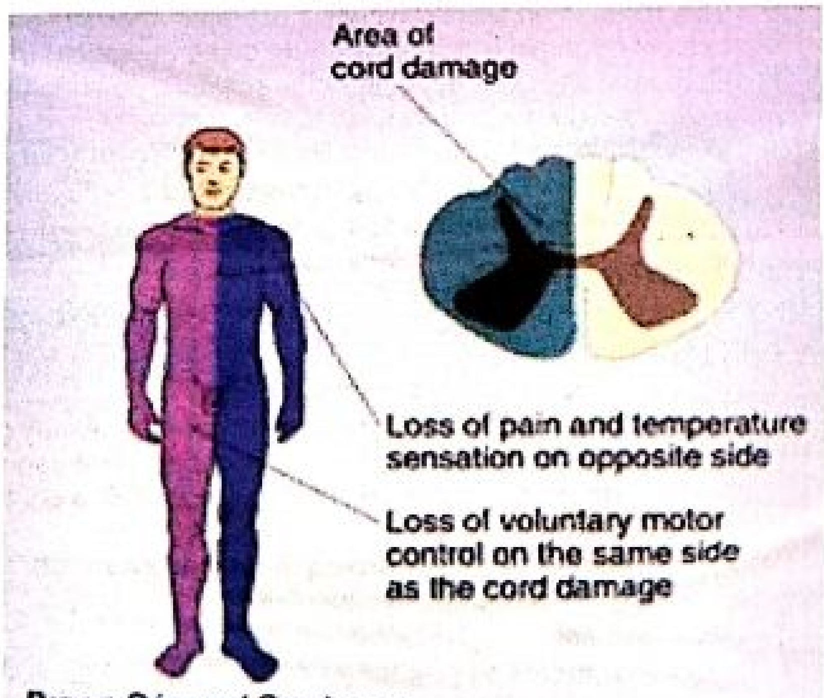
Que: 4: ------Tabes dorsalis

Tabes Dorsalis	❖ Caused by 3° syphilis. ❖ Results from degeneration (demyelination) of dorsal columns tracts ❖ **All posterior (dorsal column) sensations are lost** ❖ Urinary bladder is atonic→ dribbling of urine ❖ Progressive sensory ataxia (impaired proprioception → poor coordination). ❖ Associated with Charcot joints, shooting pain, Argyll Robertson pupils. ❖ **Exam will demonstrate absence of Deep Tendon Reflexes s and ⊕ Romberg sign**

Que: 5 Brown-Sequard syndrome

Brown-Sequard syndrome	❖ Effect of Hemisection of spinal cord. ○ Findings: ▪ Ipsilateral loss of all sensation at level of lesion ▪ Ipsilateral loss of proprioception, vibration, *light (2-point discrimination)* touch, and tactile sense below level of lesion (due to dorsal column damage). ▪ Contralateral pain, temperature, and crude (non-discriminative) touch below level of lesion (due to spinothalamic tract damage) ○ If lesion occurs above T1, patient may present with ipsilateral Horner syndrome due to damage of oculosympathetic pathway



Brown-Séquard Syndrome

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Examination: 7 Examination Of Cranial Nerves

Common Commands:

- Examine the Cranial Nerve (the examiner may stop you any point)
- Examine the 7th cranial nerve
- Examine the first six cranial nerves

Important TIP:

- Watch YouTube videos on examination, practice as much as you can along with the timer, try to perform examination in 2-3 minutes---so that you can answer the examiner questions then.

Examination of Cranial Nerves

- If there is a sanitizer beside patient in examination, make sure to use that
- Be sure that you are **on the right side of the patient**
- At the same time say greetings, introduce yourself, take permission and explain what you are going to do
- **Position:**
  - Ask the patient to sit on a chair, approximately one arm's length away.

General Inspection	❖ Perform a brief general inspection of the patient, looking for clinical signs suggestive of underlying pathology: ❖ Speech abnormalities: may indicate glossopharyngeal or vagus nerve pathology. ❖ Facial asymmetry: suggestive of facial nerve palsy. ❖ Eyelid abnormalities: ptosis may indicate oculomotor nerve pathology. ❖ Pupillary abnormalities: mydriasis occurs in oculomotor nerve palsy. ❖ Strabismus: may indicate oculomotor, trochlear or abducens nerve palsy.
Olfactory nerve (CN I)	❖ It carries sense of smell ❖ Ask the patient if they have noticed any recent changes to their sense of smell. ❖ Olfaction can be tested more formally using different odours **Causes of anosmia** ❖ Mucous blockage of the nose ❖ Head trauma ❖ Tumors of anterior cranial fossa ❖ COVID-19: transient anosmia is a common feature of COVID-19.
Optic nerve (CN II)	❖ It is the 2nd cranial nerve and carries **sensory** visual information from the retina to the brain ❖ In 2nd nerve examine the following o Visual acuity o Color vision o Field of vision o Fundoscopy ❖ **If the patient normally wears glasses, ensure these are worn for the assessment.** ❖ <u>**Visual Acuity**</u> o Test each eye for both near vision and far vision o <u>Near vision:</u> ▪ Ask the patient to read standard chart, or book or a newspaper keeping it at a distance of 10 inches from the eyes o <u>Far vision:</u> ▪ Assess the patient's visual acuity using a Snellen chart ▪ If the patient normally uses distance glasses, ensure these are worn for the assessment.

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- Stand the patient 6m away from the chart, covering each eye separately with their hand in turn
- Find the line of print which the patient can comfortably read at*
- If the patient is unable to read top line at 6m—then
  - Move closer (3m)
  - If still unable –move closer again (1m)
  - If still unable---asses ability to count fingers
  - If still unable ---assess light perception

❖ **Color Vision**
- Ishihara charts are used for this purpose
- On the bedside ask the patient to recognize various colors

❖ **Field of Vision**
- Assessment can be made by confrontation method in which examiner compares his own visual field with that of the patient
- Sit in front of the patient at a distance of about one meter, eyes both of you at the same level.
- You and patient should cover corresponding eyes (i.e. ***if patient has*** **covered his left eye you should cover your right eye) and look into each other's opened eye)**
- Stretch you arm keeping the fingers midway between you and the patient and bring it in from all four quadrants (upper and lower temporal, upper and lower nasal)
- Ask the patient to indicate when he can see the finger
- Normally the patient and examiner should see the finger at the same time. If the patient cannot see, keep bringing the finger in till he can see it.
- **Make sure that you both focus into each other's opened eye throughout**
- Second eye is tested in the same way
- Major visual field defects like quadrantanopia can be picked up by this method
- **Pathologies of visual field are given in the end**

❖ **Fundoscopy**
- In the context of a cranial nerve examination, fundoscopy is performed to assess the optic disc for signs of pathology (e.g. papilledema). You should offer to perform fundoscopy in your OSCE, however, it may not be required.
- Examination Technique
  - Position the patient so that the ophthalmoscope is held directly at the level of the patient's eye.
  - Dim the lights.
  - Instruct the patient to focus on an object straight ahead on the wall.
  - **To exam the patient's RIGHT eye, hold the ophthalmoscope in your RIGHT hand and use your RIGHT eye to look through the instrument.**
  - Place your left hand on the patient's head and place your thumb on their eyebrow.
  - Hold the ophthalmoscope about 6 inches from the eye and 15 degrees to the right of the patient.
  - Find the red reflex.
  - Move in closer, staying nasally until you see the optic nerve.
  - Rotate the diopter lens until the optic nerve comes into focus.
  - Scan slightly up, down, right and left to look at the vessels.
  - Move out temporally to find the macula and fovea.
  - Repeat the same technique on the other eye.

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Oculomotor (CN III), trochlear (CN IV) and abducens (CN VI) nerves	❖ The oculomotor (CN III), trochlear (CN IV) and abducens (CN VI) nerves transmit motor information to the extraocular muscles to control eye movement and eyelid function. The oculomotor nerve also carries parasympathetic fibers responsible for pupillary constriction. ❖ The ocular muscles nerves supply is given in the end ❖ **Eyelids** o Inspect the eyelids for evidence of ptosis which can be associated with: ▪ Oculomotor nerve pathology ▪ Horner's syndrome ▪ Neuromuscular pathology (e.g. myasthenia gravis) ❖ **Light Reflex** o Its Afferent path is through the 2nd nerve and Efferent path is through the 3rd nerve. o Shine bright light into the eye from the side while patient looks straight focusing a distant object to avoid accommodation response. o A hand should be placed over the nose to prevent the light from entering the opposite eye. o **Direct Pupillary Reflex** ▪ Shine the light from your pen torch into the *patient's* pupil and observe for pupillary restriction in the ipsilateral eye. ▪ A normal direct pupillary reflex involves constriction of the pupil that the light is being shone into. o **Consensual Pupillary Reflex** ▪ Once again shine the light from your pen torch into the same pupil, but this time observe for pupillary restriction in the contralateral eye. ▪ A normal consensual pupillary reflex involves the contralateral pupil constricting as a response to light entering the eye being tested ❖ **Swinging light test** o Move the pen torch rapidly between the two pupils to check for a relative afferent pupillary defect (see more details below). ❖ **Accommodation Reflex** o Ask the patient to focus on a distant object (clock on the wall/light switch). o Place your finger approximately 20-30cm in front of their eyes (alternatively, use the patient's own thumb). o Ask the patient to switch from looking at the distant object to the nearby finger/thumb. o Observe the pupils, you should see constriction and convergence bilaterally. ❖ **Eye Movements** o Briefly assess for abnormalities of eye movements which may be caused by underlying cranial nerve palsy (e.g. oculomotor, trochlear, abducens, vestibular nerve pathology). o Hold your finger (or a pin) approximately 30cm in front of the patient's eyes and ask them to focus on it. Look at the eyes in the primary position for any deviation or abnormal movements. o Ask the patient to keep their head still whilst following your finger with their eyes. Ask them to let you know if they experience any double vision or pain. o Move your finger through the various axes of eye movement in a 'H' pattern. o Observe for any restriction of eye movement and note any nystagmus (which may suggest vestibular nerve pathology or stroke).
Trigeminal nerve (CN V)	❖ The trigeminal nerve (CN V) transmits both **sensory information** about facial sensation and **motor information** to the muscles of mastication.

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- **Normal Anatomy**
  - The trigeminal nerve has three sub-divisions, each of which has its own broad set of functions (not all are covered below):
    - **Ophthalmic (V1):** carries sensory information from the scalp and forehead, nose, upper eyelid as well as the conjunctiva and cornea of the eye.
    - **Maxillary (V2):** carries sensory information from the lower eyelid, cheek, nares, upper lip, upper teeth and gums.
    - **Mandibular (V3):** carries sensory information from the chin, jaw, lower lip, mouth, lower teeth and gums. Also carries motor information to the muscles of mastication (masseter, temporal muscle and the medial/lateral pterygoids) as well as the tensor tympani, tensor veli palatini, mylohyoid and digastric muscles.

- **Sensory Assessment**
  - First, explain the modalities of sensation you are going to assess (e.g. light touch/pinprick) to the patient by demonstrating on their sternum. This provides them with a reference of what the sensation should feel like (assuming they have no sensory deficits in the region overlying the sternum).
  - Ask the patient to close their eyes and say 'yes' each time they feel you touch their face.
  - Assess the sensory component of V1, V2 and V3 by testing light touch and pinprick sensation across regions of the face supplied by each branch:
    - Forehead (lateral aspect): ophthalmic (V1)
    - Cheek: maxillary (V2)
    - Lower jaw (avoid the angle of the mandible as it is supplied by C2/C3): mandibular branch (V3)
  - You should compare each region on both sides of the face to allow the patient to identify subtle differences in sensation.

- **Motor Assessment**
  - Use the muscles of mastication to assess the motor component of V3:
  - Inspect the temporalis (located in the temple region) and masseter muscles (located at the posterior jaw) for evidence of wasting. This is typically most noticeable in the temporalis muscles, where a hollowing effect in the temple region is observed.
  - Palpate the masseter muscle (located at the posterior jaw) bilaterally whilst asking the patient to clench their teeth to allow you to assess and compare muscle bulk.
  - Ask the patient to open their mouth whilst you apply resistance underneath the jaw to assess the lateral pterygoid muscles. An inability to open the jaw against resistance or deviation of the jaw (typically to the side of the lesion) may occur in trigeminal nerve palsy.

- **Reflexes**
  - **Jaw Jerk Reflex**
    - This response is exaggerated in patients with an upper motor neuron lesion. Both afferent and efferent pathways of the jaw jerk reflex involve the trigeminal nerve.
    - Clearly explain what the procedure will involve to the patient
    - Ask the patient to open their mouth.
    - Place your finger horizontally across the patient's chin.
    - Tap your finger gently with the tendon hammer.
    - In healthy individuals, this should trigger a slight closure of the mouth. In patients with upper motor neuron lesions, the jaw may briskly move upwards causing the mouth to close completely.
  - **Corneal Reflex**

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	▪ The corneal reflex involves involuntary blinking of both eyelids in response to unilateral corneal stimulation (direct and consensual blinking). The afferent branch of the corneal reflex involves V1 of the trigeminal nerve whereas the efferent branch is mediated by the temporal and zygomatic branches of the facial nerve. ▪ Clearly explain what the procedure will involve to the patient ▪ Gently touch the edge of the cornea using a wisp of cotton wool. ▪ In healthy individuals, you should observe both direct and consensual blinking. The absence of a blinking response suggests pathology involving either the trigeminal or facial nerve. ▪ The corneal reflex is not usually assessed in an OSCE scenario, however, you should offer to test it and understand the purpose behind the test.
Facial nerve (CN VII)	❖ The facial nerve (CN VII) transmits motor information to the muscles of facial expression and the stapedius muscle (involved in the regulation of hearing). The facial nerve also has a sensory component responsible for the conveyance of taste from the anterior two-thirds of the tongue. ❖ **Sensory Assessment** o Ask the patient if they have noticed any recent changes in their sense of taste. ❖ **Motor Assessment** o Hearing changes ▪ Ask the patient if they have noticed any changes to their hearing (paralysis of the stapedius muscle can result in hyperacusis). o Inspection ▪ Inspect the patient's face at rest for asymmetry, paying particular attention to: ✓ Forehead wrinkles ✓ Nasolabial folds ✓ Angles of the mouth o Facial movement ▪ Ask the patient to carry out a sequence of facial expressions whilst again observing for asymmetry: ✓ Raised eyebrows: assesses frontalis – "Raise your eyebrows as if you're surprised." ✓ Closed eyes: assesses orbicular oculi – "Scrunch up your eyes and don't let me open them." ✓ Blown out cheeks: assesses orbicularis oris – "Blow out your cheeks and don't let me deflate them." ✓ Smiling: assesses levator anguli oris and zygomaticus major – "Can you do a big smile for me?" ✓ Pursed lips: assesses orbicularis oris and buccinator – "Can you try to whistle?"
Vestibulocochlear nerve (CN VIII)	❖ The vestibulocochlear nerve (CN VIII) transmits sensory information about sound and balance from the inner ear to the brain. The vestibulocochlear nerve has no motor component. ❖ **Gross Hearing Assessment** o Ask the patient if they have noticed any change in their hearing recently. o Explain that you're going to say 3 words or 3 numbers and you'd like the patient to repeat them back to you (choose two-syllable words or bi-digit numbers).

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- Position yourself approximately 60cm from the ear and then whisper a number or word.
- Mask the ear not being tested by rubbing the tragus. Do not place your arm across the face of the patient when rubbing the tragus, it is far nicer to occlude the ear from behind the head. If possible shield the patient's eyes to prevent any visual stimulus.
- If there is no response you can move closer and repeat the test at 15cm.
- Assess the other ear in the same way.

❖ **Rinne's Test**

- Place a vibrating 512 Hz tuning fork firmly on the mastoid process (apply pressure to the opposite side of the head to make sure the contact is firm). This tests bone conduction.
- Confirm the patient can hear the sound of the tuning fork and then ask them to tell you when they can no longer hear it.
- When the patient can no longer hear the sound, move the tuning fork *in front* of the external auditory meatus to test air conduction.
- Ask the patient if they can now hear the sound again. If they can hear the sound, it suggests air conduction is better than bone conduction, which is what would be expected in a healthy individual (*this is often confusingly* referred to as a "Rinne's positive" result).

❖ **Weber's Test**

- Tap a 512Hz tuning fork and place in the midline of the forehead. The tuning fork should be set in motion by striking it on your knee (not the patient's knee or a table).
- Ask the patient "Where do you hear the sound?"
- These results should be assessed in context with the results of Rinne's test before any diagnostic assumptions are made:

❖ **Interpretation**

	RINNE TEST	WEBER TEST
Normal	air conduction > bone conduction	heard equally in both ears.
Conductive	Abnormal (bone > air)	Localizes to affected ear
Sensorineural	Normal (air > bone)	Localizes to unaffected ear

❖ **Conductive Vs Sensorineural Hearing Loss**

- Conductive hearing loss occurs when sound is unable to effectively transfer at any point between the outer ear, external auditory canal, tympanic membrane and middle ear (ossicles). Causes of conductive hearing loss include excessive ear wax, otitis externa, otitis media, perforated tympanic membrane and otosclerosis.
- Sensorineural hearing loss occurs due to dysfunction of the cochlea and/or vestibulocochlear nerve. Causes of sensorineural hearing loss include increasing age (presbycusis), excessive noise exposure, genetic mutations, viral infections (e.g. cytomegalovirus) and ototoxic agents (e.g. gentamicin).

❖ **Vestibular Division or Testing**

- Special tests of vestibular function (caloric stimulation and rotation tests) are not possible on the bed side.

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	○ But the presence of positional nystagmus can be looked for if the patient is on stretcher/couch in examination ○ Position the patient head beyond the couch ○ Extend the head fully and rotate it on one side. ○ If nystagmus appears transiently and then disappears this is called positional nystagmus
Glossopharyngeal (CN IX) and Vagus (CN X) nerves	❖ The **glossopharyngeal nerve** transmits motor information to the stylopharyngeus muscle which elevates the pharynx during swallowing and speech. The glossopharyngeal nerve also transmits sensory information that conveys taste from the posterior third of the tongue. Visceral sensory fibres of CN IX also mediate the afferent limb of the gag reflex. ❖ The **vagus nerve** transmits motor information to several muscles of the mouth which are involved in the production of speech and the efferent limb of the gag reflex. ❖ The glossopharyngeal and vagus nerves are assessed together because of their closely related functions. ❖ Ask the patient if they have experienced any issues with swallowing, as well as any changes to their voice or cough. ❖ <u>**Inspection**</u> ○ Ask the patient to open their mouth and inspect the soft palate and uvula: ○ Note the position of the uvula. Vagus nerve lesions result in deviation of the uvula towards the unaffected side. ○ Ask the patient to say "ahh": ▪ Inspect the palate and uvula which should elevate symmetrically, with the uvula remaining in the midline. A vagus nerve lesion will cause asymmetrical elevation of the palate and uvula deviation away from the lesion. ○ Ask the patient to cough: ▪ Vagus nerve lesions can result in the presence of a weak, non-explosive sounding bovine cough caused by an inability to close the glottis. ❖ <u>**Swallow Assessment**</u> ○ Ask the patient to take a small sip of water (approximately 3 teaspoons) and observe the patient swallow. The presence of a cough or a change to the quality of their voice suggests an ineffective swallow which can be caused by both glossopharyngeal (afferent) and vagus (efferent) nerve pathology. ❖ <u>**Gag Reflex**</u> ○ Stimulate the posterior aspect of the tongue and oropharynx which in healthy individuals should trigger a gag reflex. ○ The absence of a gag reflex can be caused by both glossopharyngeal and vagus nerve pathology.
Accessory nerve (CN XI)	❖ The accessory nerve (CN XI) transmits motor information to the sternocleidomastoid and trapezius muscles. It does not have a sensory component. ❖ First, inspect for evidence sternocleidomastoid or trapezius muscle wasting. ❖ Ask the patient to raise their shoulders and resist you pushing them downwards: this assesses the trapezius muscle (accessory nerve palsy will result in weakness). ❖ Ask the patient to turn their head left whilst you resist the movement and then repeat with the patient turning their head to the right: this assesses the sternocleidomastoid muscle (accessory nerve palsy will result in weakness).
Hypoglossal nerve (CN XII)	❖ The hypoglossal nerve (CN XII) transmits motor information to the extrinsic muscles of the tongue (except for palatoglossus which is innervated by the vagus nerve). It does not have a sensory component. ❖ Ask the patient to open their mouth and inspect the tongue for wasting and fasciculations at rest (minor fasciculations can be normal).

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	❖ Ask the patient to protrude their tongue and observe for any deviation (which occurs towards the side of a hypoglossal lesion). ❖ Place your finger on the patient's cheek and ask them to push their tongue against it. Repeat this on each cheek to assess and compare power (weakness would be present on the side of the lesion).
Ending the Examination	❖ Explain to the patient that the examination is now finished. ❖ **Thank the patient for their time**

Que: 1 Explain the light reflex pathway and their lesion?

Pupillary Light Reflex	❖ Each afferent limb of the pupillary reflex has two efferent limbs, one ipsilateral and one contralateral. ❖ **Afferent Limb** o Sensory input (e.g. light being shone into the eye) is transmitted from the retina, along the optic nerve to the ipsilateral pretectal nucleus in the midbrain ❖ **Efferent Limb** o Motor output is transmitted from the pretectal nucleus to the Edinger-Westphal nuclei on both sides of the brain (ipsilateral and contralateral). o Each Edinger-Westphal nucleus gives rise to efferent nerve fibres which travel in the oculomotor nerve to innervate the ciliary sphincter and enable pupillary constriction. ✦ Retina→ optic nerve →pretectal nucleus → Edinger-Westphal → oculomotor nerve→ ciliary sphincter
Assessment	❖ Normal pupillary light reflexes rely on the afferent and efferent pathways of the reflex arc being intact and therefore provide an indirect way of assessing their function: o The direct pupillary reflex assesses the ipsilateral afferent limb and the ipsilateral efferent limb of the pathway. o The consensual pupillary reflex assesses the contralateral efferent limb of the pathway. o The swinging light test is used to detect relative afferent limb defects.
Abnormal Pupillary Responses	❖ **Lesion of the Afferent path (2nd nerve) --Relative Afferent Pupillary Defect (Marcus-Gunn pupil):** o Normally light shone into either eye should constrict both pupils equally (due t the dual efferent pathways described above). o When the afferent limb in one of the optic nerves is damaged, partially or completely, both pupils will constrict less when light is shone into the affected eye compared to the healthy eye. o The pupils, therefore, appear to relatively dilate when swinging the torch from the healthy to the affected eye. o This is termed a Relative Afferent Pupillary Defect (RAPD) ❖ **<u>Lesion of the Efferent path (3rd nerve)</u>** o Pupil of the affected eye is dilated and fixed. o When light is shone into the affected eye there is no response on that side but pupil of normal side constricts o When light is shone into the normal eye pupil of that side constricts, but there is no response on the affected side ❖ **<u>Argyll- Robertsonian Pupil</u>** o Affected pupil is small and irregular o Accommodation reflex is present but light reflex is absent

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Que: 2 –What are the components of Accommodation reflex?

Accommodation Reflex	❖ The accommodation reflex (or accommodation-convergence reflex) is a reflex action of the eye, in response to focusing on a near object, then looking at a distant object (and vice versa), comprising coordinated changes in vergence, lens shape (accommodation) and pupil size. ❖ It is dependent on cranial nerve II (afferent limb of reflex), superior centers (interneuron) and cranial nerve III (efferent limb of reflex).
Pathway	❖ Retina→ optic nerve chiasma optic tract→ lateral geniculate body→ striate cortex → Edinger-Westphal nucleus→ 3rd cranial nerve → sphincter pupillae

Que: 3----Pupillary Control & Ptosis?

Miosis	❖ Causes of Miosis (small pupil) o Congenital o Senile miosis o Horner's syndrome o Argyll-Robertson pupil o Pontine hemorrhage o Drugs causes: ▪ Opiates (morphin) ▪ Organophosphate toxicity ▪ Parasympathomimetics: pilocarpine
Mydriasis	❖ Causes of myDriasis (Dilated pupil): ❖ Congenital ❖ Third nerve III palsy ❖ Holmes-Adie pupil ❖ Phaeochromocytoma ❖ Drug causes of mydriasis o Topical mydriatics: tropicamide, atropine o Sympathomimetic drugs: amphetamines, cocaine o Anticholinergic drugs: TCA'S
Ptosis	❖ Ptosis may be unilateral or bilateral ❖ Causes of bilateral ptosis: o Myotonic dystrophy o Myasthenia gravis o Syphilis o Congenital ❖ Causes of unilateral ptosis: as above plus: o Third nerve palsy o Horner's ❖ Important point to remember **Ptosis + dilated pupil = third nerve palsy** **Ptosis + constricted pupil = Horner's**
Horner Syndrome **Mnemonic→ PAM is horny (Horner)**	❖ Sympathetic denervation of face: ❖ Ptosis (slight drooping of eyelid: superior tarsal muscle) ❖ Anhidrosis (absence of sweating) and flushing of affected side of face ❖ Miosis (pupil constriction) ❖ Associated with lesion of spinal cord above T1 (e.g., Brown-Séquard syndrome, late-stage syringomyelia) or Pancoast tumor) , Any interruption results in Horner syndrome

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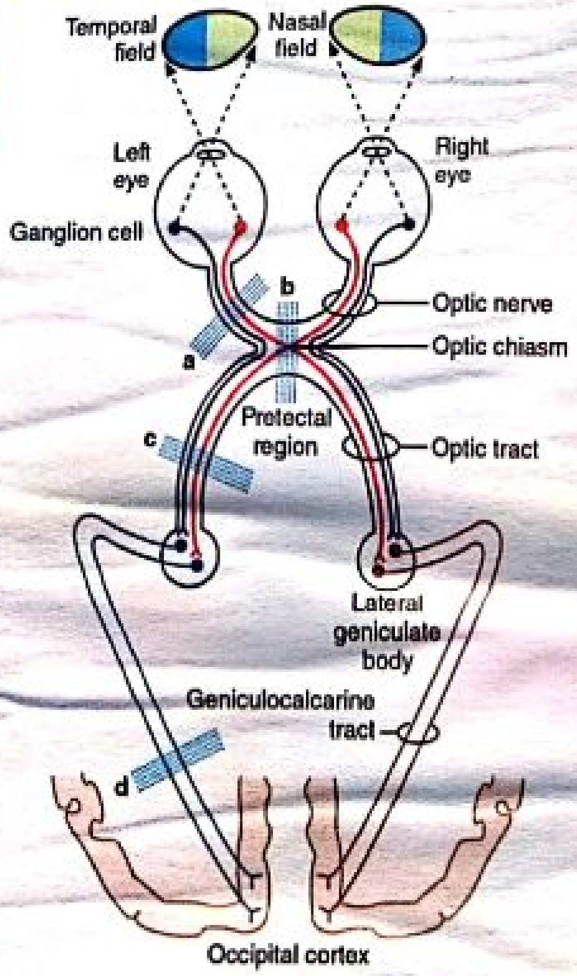
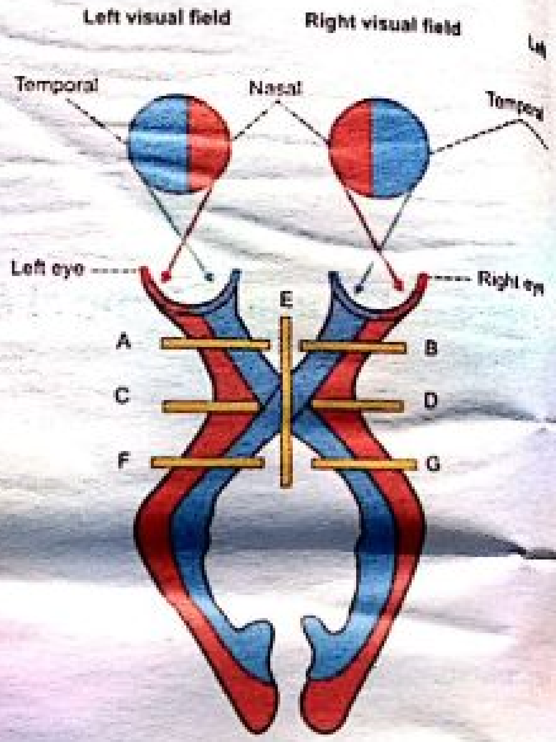
Cranial Nerves

Que: 4 ----Visual field defects and optic pathway?





A	Lesion of left optic nerve: Total blindness of left eye
B	Lesion of right optic nerve: Total blindness of right eye
C	Lesion of lateral fibers in left side of optic chiasma: Left nasal hemianopia
D	Lesion of lateral fibers in right side of optic chiasma: Right nasal hemianopia.
C + D	Lesion of lateral fibers in both sides of optic chiasma: Binasal hemianopia
E	Lesion of medial fibers in optic chiasma: Bitemporal hemianopia
F	Lesion of left optic radiation: Right homonymous hemianopia
G	Lesion of right optic radiation: Left homonymous hemianopia
Not shown in fig	Cutting the Geniculocalcarine tract causes homonymous hemianopia with macular sparing

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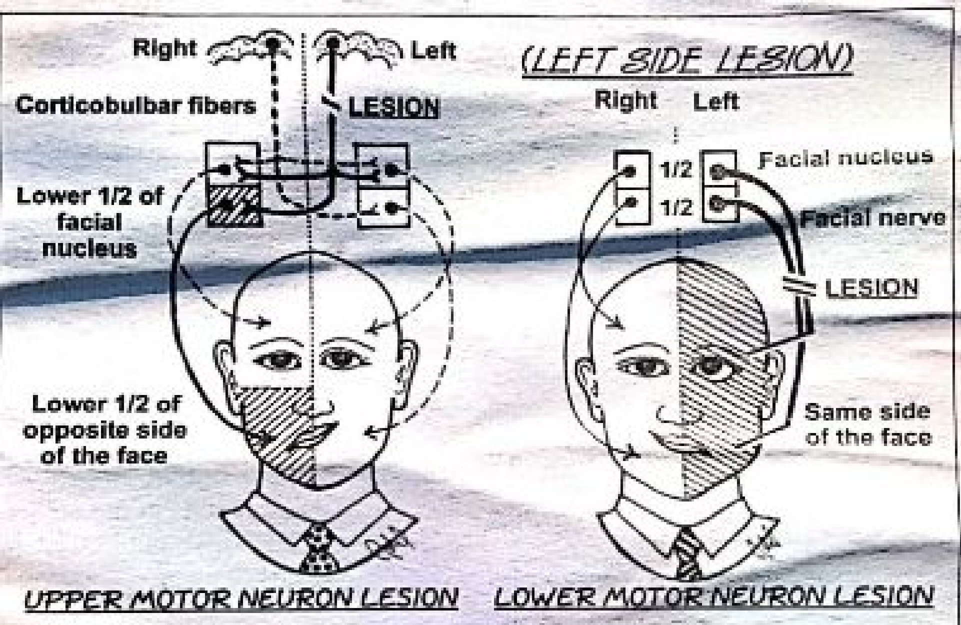
Que: 5 —Facial nerve lesions (UMNL & LMNL)—Bell's palsy

Upper Motor Neuron Lesion	Lower Motor Neuron Lesion
❖ Destruction of motor cortex or connection between motor cortex and facial nucleus in pons	❖ Destruction of facial nucleus or CN VII anywhere along its course
❖ Contralateral paralysis of lower muscles of facial expression	❖ Ipsilateral paralysis of upper and lower muscles of facial expression
❖ Forehead is spared due to its bilateral UMN innervation	❖ Causes: ○ *Bell palsy* (idiopathic—most common) ○ Lyme disease, herpes simplex, herpes zoster (Ramsay Hunt syndrome), tumors (e.g., parotid gland)



FACIAL NERVE LESIONS (UMNL and LMNL)

Que: 6 ——Ocular Motility?

Nerve supply	❖ Mnemonic: **LR6-SO4 Rest 3** ○ Lateral Rectus→ 6Th (abducent) cranial nerve ○ Superior Oblique→ 4Th (trochlear) cranial nerve ○ **Rest** all are supplied by→ 3RD (occulomotor) nerve
Action	Mnemonic: Obliques go Opposite (**IO** upward, **SO** downward). (see table below) ○ Levator palpebrae superioris (muscle of eyelid): ▪ Elevation of upper eyelid

Superior Rectus	Inferior Rectus	Medial Rectus	Lateral Rectus	Superior Oblique	Inferior Oblique
Upward rotation Medial rotation Intortion	Downward rotation Medial rotation Extortion	Medial rotation	Lateral rotation	Downward rotation Lateral rotation Intortion	Upward rotation Lateral rotation Extortion

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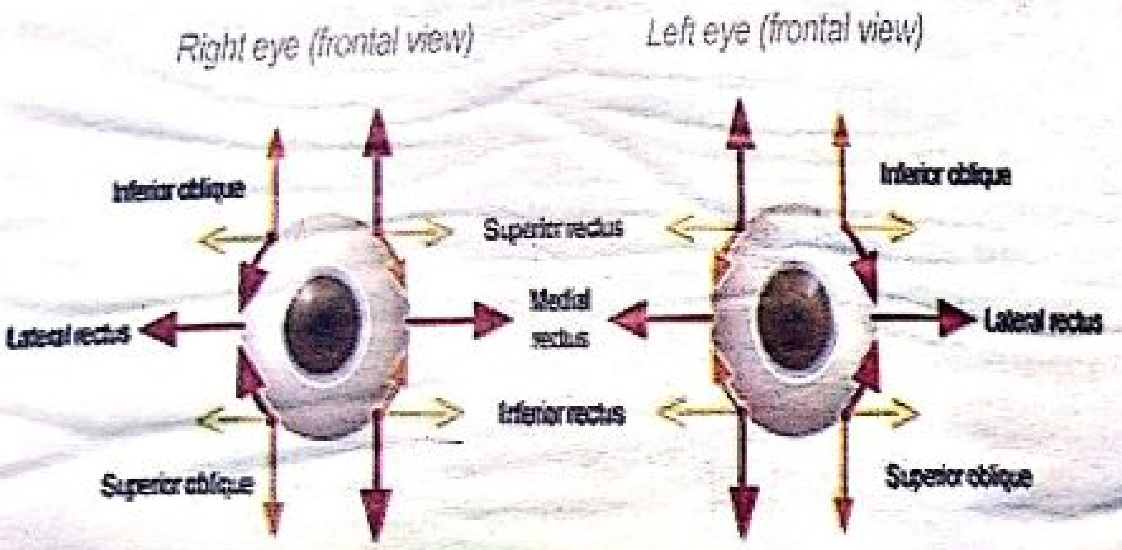
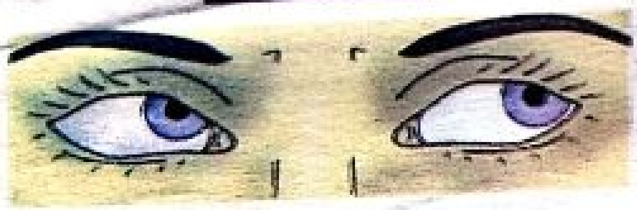


Que: 7 ---------Cranial Nerve Palsies

CN III damage Right eye: Downward and outward gaze, dilated pupil, eyelid manually elevated due to ptosis Left: Normal	❖ CN III has both motor and parasympathetic (peripheral) components. ❖ Motor output: o Motor output is to Extraocular muscles o Lesion results in ptosis, "down and out" gaze. ❖ Parasympathetic output: o Lesion results in absent pupillary light reflex, "blown pupil" often with "down-and-out" gaze
CN IV damage 	❖ Eye moves upward, particularly with contralateral gaze (problems going down stairs, may present with compensatory head tilt in the opposite direction).
CN VI damage 	❖ Medially directed eye that cannot abduct

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Que: 8--------Ophthalmoplegia?

Superior colliculus Parinaud Syndrome	Internuclear Ophthalmoplegia (INO)	
❖ *Paralysis of conjugate Vertical gaze (upward gaze)*	❖ *Lesion in medial longitudinal fasciculus → A conjugate horizontal gaze palsy* ❖ *Seen in multiple sclerosis* ❖ Internuclear ophthalmoplegia (INO), a conjugate horizontal gaze palsy. Lack of communication such that when CN VI nucleus activates ipsilateral lateral rectus, contralateral CN III nucleus does not stimulate medial rectus to contract. ❖ *Abducting eye gets nystagmus (CN VI overfires to stimulate CN III).* Convergence normal.	NOTE: ➤ ***Superior colliculi— conjugate vertical gaze center.*** ➤ ***Inferior colliculi— auditory.*** MNEMONIC: **Your eyes are above** (superior colliculus (visual) **your ears** (inferior colliculus (auditory)

Internuclear ophthalmoplegia results in nystagmus of the *contra-lateral* eye

e.g. right INO = nystagmus of left eye (CN VI overfires to stimulate CN III)

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Examination: 8 Cerebellar Examination

Common Commands:

- Examine for cerebellar signs
- Talk with the patient, what is your finding (scanning speech). What else do you want to examine (I want to examine to see the cerebellar signs)

Important TIP:

- Watch YouTube videos on examination, practice as much as you can along with the timer, try to perform examination in 2-3 minutes---so that you can answer the examiner questions then.

Examination of Cerebellum

- ❖ If there is a sanitizer beside patient in examination, make sure to use that
- ❖ Be sure that you are **on the right side of the patient**
- ❖ At the same time say greetings, introduce yourself, take permission and explain what you are going to do

Speech	❖ Assess speech by asking the patient to repeat the following phrases: o "British constitution", "Baby hippopotamus" ❖ Cerebellar lesions can cause ataxic dysarthria which can present in a number of ways: o Scanning speech (also known as staccato speech): words are broken down into separate syllables, often separated by pauses and spoken with varying volume. o Slurred speech: patients are often mistaken for being intoxicated as a result. o Scanning and slurred speech often occur in combination (often referred to as "slurred staccato speech").
Nystagmus	❖ Nystagmus involves repetitive, involuntary oscillation of the eyes and can be either physiological (i.e. benign) or associated with cerebellar pathology. ❖ When assessing for nystagmus, begin by asking the patient to report any double vision (diplopia) if they experience it during the assessment. Diplopia may suggest the presence of strabismus which can be associated with some cerebellar syndromes (e.g. vestibulocerebellar syndrome). ❖ Ask the patient to look straight ahead and examine the eyes in the primary position. Look for any abnormal movement such as nystagmus. ❖ Ask the patient to keep their head still and follow your finger (or another visual target) with their eyes. ❖ Move your finger throughout the various axes of vision in a 'H' pattern. ❖ Look for multiple beats of nystagmus (a few beats at the extremes of gaze can be a normal variant and is termed physiological nystagmus).
Finger-to-nose test	❖ The finger-to-nose test is a convenient method of assessing upper limb co-ordination: ❖ Position your finger so that the patient has to fully outstretch their arm to reach it. ❖ Ask the patient to touch their nose with the tip of their index finger and then touch your fingertip. ❖ Ask the patient to continue to do this finger to nose motion as fast as they are able to. ❖ When patients with cerebellar pathology perform this task, they may exhibit both dysmetria and intention tremor:

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	o Dysmetria: refers to a lack of coordination of movement. Clinically this results in the patient missing the target by over/undershooting. o Intention tremor: a broad, coarse, low-frequency tremor that develops as a limb reaches the endpoint of a deliberate movement. Clinically this results in a tremor that becomes apparent as the patient's finger approaches yours. Be careful not to mistake an action tremor (which occurs throughout the movement) for an intention tremor. o The presence of dysmetria and intention tremor is suggestive of ipsilateral cerebellar pathology.
Rebound phenomenon	❖ Rebound phenomenon is a reflex that occurs when a patient attempts to move a limb against resistance that has been suddenly removed. ❖ Ask the patient to close their eyes and position their arms outstretched in front of them with their palms facing upwards. ❖ Explain to the patient that you are going to apply some downward resistance on each arm and that they should try to maintain the current position of their arms as you apply that resistance. ❖ Push downwards on one of the patient's forearms and then immediately remove the resistance. ❖ Observe the movement of the limb being assessed. ❖ **Interpretation** o In healthy individuals, when the resistance is removed the limb will usually move a short distance upwards (i.e. the direction the patient was pushing towards to maintain limb position) before antagonist muscles contract and move the limb back to the original position. This is the normal reflex that results in rebound phenomenon. o An exaggerated version of rebound phenomenon is suggestive of spasticity (e.g. stroke affecting the cerebrum). o A complete absence of the phenomenon, caused by a failure of the antagonist muscles to contract, is suggestive of cerebellar disease
Tone	❖ Assess tone in the muscle groups of the shoulder, elbow and wrist on each arm, comparing each side as you go: ❖ Support the patient's arm by holding their hand and elbow. ❖ Ask the patient to relax and allow you to fully control the movement of their arm. ❖ Move the muscle groups of the shoulder (circumduction), elbow (flexion/extension) and wrist (circumduction) through their full range of movements. ❖ Feel for abnormalities of tone as you assess each joint (e.g. hypotonia).
Dysdiadochokinesia	❖ Dysdiadochokinesia is a term that describes the inability to perform rapid, alternating movements, which is a feature of ipsilateral cerebellar pathology. ❖ Ask the patient to place their left palm on top of their right palm. ❖ Then ask them to turn over their left hand and touch the back of it onto their right palm. ❖ Now ask them to return their left hand to the original position (left palm on right palm). ❖ Ask the patient to now repeat this sequence of movements as fast as they are able until you tell them to stop. It is often useful to demonstrate the sequence of movements to the patient to aid understanding. ❖ Observe the speed and fluency by which the patient is able to carry out this sequence of rapidly alternating movements. ❖ Repeat the assessment with the other hand. ❖ **Interpretation** o Patients with cerebellar ataxia may struggle to carry out this task, with their movements appearing slow and irregular. The presence of dysdiadochokinesia suggests ipsilateral cerebellar pathology.

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Knee-Jerk Reflex	❖ Explain to the patient that you are now going to assess their reflexes by tapping gently on their leg with a tendon hammer. ❖ Remove the weight from the patient's lower limb by either supporting it or asking the patient to hang their legs over the side of the bed. Ensure the patient's lower limb is completely relaxed before assessing the deep tendon reflex. ❖ Tap the patellar tendon with the tendon hammer (making sure to hold the tendon hammer handle at its end to allow gravity to aid a good swing). ❖ If a reflex appears absent make sure the patient is fully relaxed and then perform a reinforcement manoeuvre. ❖ **Interpretation** o In cerebellar disease, reflexes are described as 'pendular', which means less brisk and slower in their rise and fall. However, similar to reduced tone, this sign is very subjective and often reflexes appear to be 'normal' in cerebellar disease.
Heel-to-shin test	❖ The heel-to-shin test is a convenient method of assessing lower limb co-ordination: ❖ Ask the patient to place their left heel on their right knee and then run it down their shin in a straight line. ❖ Then ask them to return their left heel to the starting position over the right knee. ❖ Now ask them to repeat this sequence of movements in a smooth motion until you tell them to stop. ❖ Repeat the assessment with the right heel on the left leg. ❖ **Interpretation** o Dysmetria (i.e. incoordination) whilst attempting to perform this task is suggestive of ipsilateral cerebellar pathology. o A note of caution: weakness (e.g. from an upper motor neuron lesion) can also produce apparent incoordination of this movement. As a result, power should be assessed before any diagnostic conclusions are drawn.
Gait	❖ Ask the patient to walk to the end of the examination room and then turn and walk back whilst you observe their gait paying attention to: ❖ **Interpretation:** o Stance: a broad-based ataxic gait is typically associated with midline cerebellar pathology (e.g. a lesion in multiple sclerosis or degeneration of the cerebellar vermis secondary to chronic alcohol excess). o Stability: a staggering, slow and unsteady gait is typical of cerebellar pathology. In unilateral cerebellar disease, patients will veer towards the side of the lesion. o Turning: patients with cerebellar disease will find the turning maneuver particularly difficult.
Heel-toe test of Gait (Tandem Walking)	❖ Ask the patient to walk along a straight line so that the heel of one foot comes directly in contact with the toes of other foot ❖ The rare foot is then advance so that its heel is then placed in front of the previously front foot ❖ **Interpretation:** o Patient with cerebellar dysfunction is unable to do so and tends to fall towards diseased side
Romberg's sign	❖ Ask the patient to stand erect with feet's together and eyes closed ❖ Stand Close by as a precaution in order to save the person from falling ❖ **Interpretation:** o Romberg's test is used to assess for loss of proprioceptive or vestibular function (known as sensory ataxia). The test does not assess cerebellar function and instead is used to quickly screen for evidence of sensory ataxia (i.e. non-cerebellar causes of balance issues).
Ending The Examination	❖ Explain to the patient that the examination is now finished. ❖ **Thank the patient for their time and cover the patient**

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Examination: 9 Examination of Thyroid

Common Commands:

- Examine the thyroid gland or neck
- Examine the thyroid status of the patient
- Look at the face (hypothyroid or exophthalmos), what else do you want to examine?

Important TIP:

- Watch YouTube videos on examination, practice as much as you can along with the timer, try to perform examination in 2-3 minutes---so that you can answer the examiner questions then.

Examination of Thyroid Status

- If there is a sanitizer beside patient in examination, make sure to use that
- Be sure that you are **on the right side of the patient**
- At the same time say greetings, introduce yourself, take permission and explain what you are going to do
- **Position:**
  - Ask the patient to sit on a chair for the assessment.
  - Adequately expose the patient's neck and upper sternum.

Inspection	❖ Inspect the patient, looking for clinical signs suggestive of underlying pathology: ○ Weight loss (hyperthyroidism), weight gain (hypothyroidism), anxiety (hyperthyroidism) ○ Clothing: heat intolerance (hyperthyroidism), cold intolerance (hypothyroidism) ○ Hoarse voice: caused by compression of the larynx due to thyroid gland enlargement (e.g. thyroid malignancy).
Hands	❖ **Inspection** ○ Dry skin (hypothyroidism), Excessive sweating (hyperthyroidism). ○ Thyroid acropachy: similar in appearance to finger clubbing but caused by periosteal phalangeal bone overgrowth secondary to Graves' disease. ○ Onycholysis: painless detachment of the nail from the nail bed associated with hyperthyroidism. ○ Palmar erythema: reddening of the palms associated with hyperthyroidism, chronic liver disease and pregnancy. ❖ **Peripheral tremor** ○ Peripheral tremor is a feature of hyperthyroidism ○ Ask the patient to stretch their arms out in front of them, place a piece of paper and observe for tremor
Radial pulse	❖ Locate the radial pulse, assess the rate and rhythm. ○ Irregular rhythm suggests atrial fibrillation ○ Bradycardia (hypothyroidism). Tachycardia (hyperthyroidism)
Face	❖ **General inspection** ○ Dry skin (hypothyroidism), Excessive sweating (hyperthyroidism) ○ Eyebrow loss: the absence of the outer third of the eyebrows is associated with hypothyroidism (although this is a rare sign).
Eyes	❖ **Lid retraction** ○ To identify lid retraction, inspect the eyes from the front and note if sclera is visible between the upper lid margin and the corneal limbus (this indicative of lid retraction). ○ Upper eyelid retraction is the most common ocular sign of Graves' disease however it can be present in other thyrotoxic states (e.g. toxic multinodular goiter). ❖ **Exophthalmos**

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	o To identify exophthalmos, inspect the eye from the front, the side and from above. ❖ **Eye movements** o Assess for evidence of ophthalmoplegia (e.g. restricted eye movement, diplopia) and pain during eye movement caused by Graves' disease. o Ask the patient to keep their head still and follow your finger with their eyes. o Move your finger through the various axes of eye movement ("H" shape). o Observe for restriction of eye movements and ask the patient to report any double vision or pain. ❖ **Lid Lag** o Lid lag refers to a delay in the descent of the upper eyelid in relation to the eyeball when looking downward (associated with Graves' disease). o Hold your finger superiorly and ask the patient to follow it with their eyes, whilst keeping their head still. o Move your finger in a downwards direction whilst observing the patient's upper eyelids as the patient's eyes follow your finger. o If lid lag is present, the upper eyelids will be observed lagging behind the eyes' downward movement, with the sclera being visible between the upper lid margin and the corneal limbus.
Thyroid inspection	❖ **General inspection** o Inspect the midline of the neck from the front and the sides noting any masses (e.g. goiter) or scars (e.g. previous thyroidectomy). o The normal thyroid gland should not be visible. ❖ **Swallowing** o Ask the patient to swallow some water and observe the movement of the mass: o Thyroid gland masses (e.g. a goitre) and thyroglossal cysts typically move upwards with swallowing. o Lymph nodes will typically move very little with swallowing. o An invasive thyroid malignancy may not move with swallowing if tethered to surrounding tissue. ❖ **Tongue protrusion** o Ask the patient to protrude their tongue: o Thyroglossal cysts will move upwards noticeably during tongue protrusion. o Thyroid gland masses and lymph nodes will not move during tongue protrusion. ❖ **Thyroid palpation** o Stand behind the patient and ask them to tilt their chin slightly downwards to relax the muscles of the neck to aid palpation of the thyroid gland. o Place the three middle fingers of each hand along the midline of the neck below the chin. o Locate the upper edge of the thyroid cartilage ("Adam's apple") with your fingers. o Move your fingers inferiorly until you reach the cricoid cartilage. The first two rings of the trachea are located below the cricoid cartilage and the thyroid isthmus overlies this area. o Palpate the thyroid isthmus using the pads of your fingers. o Palpate each lobe of the thyroid in turn by moving your fingers out laterally from the isthmus. o Ask the patient to swallow some water, whilst you feel for the symmetrical elevation of the thyroid lobes (asymmetrical elevation may suggest a unilateral thyroid mass). o Ask the patient to protrude their tongue (if a mass represents a thyroglossal cyst, you will feel it rise during tongue protrusion). o assess the following characteristics: ▪ Size, Symmetry, Masses

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	▪ Consistency: assess the consistency of the thyroid gland tissue, noting any irregularities (e.g. a widespread irregular consistency would be suggestive of a multinodular goitre) ▪ Palpable thrill: assess for evidence of a palpable thrill caused by increased vascularity of the thyroid gland due to hyperthyroidism (suggestive of Graves' disease). ▪ If a thyroid mass is noted assess its position, shape, consistency and mobility (i.e. is it tethered to underlying tissue).
Lymph node palpation	❖ Position the patient sitting upright and examine from behind if possible. ❖ Ask the patient to tilt their chin slightly downwards to relax the muscles of the neck. ❖ Stand behind the patient and use both hands to start palpating the neck. ❖ Use the pads of the second, third and fourth fingers to press and roll the lymph nodes and note any asymmetry in size, consistency and mobility of lymph nodes. ❖ Examine the following o Submental→ Submandibular→ Pre-auricular → Post-auricular→ Superficial cervical→ Deep cervical → Posterior cervical → Supraclavicular
Percussion of the sternum	❖ Percuss the sternum moving downwards from the sternal notch to assess for retrosternal dullness. ❖ Retrosternal dullness may indicate a large thyroid mass extending posteroinferiorly to the manubrium.
Auscultation of the thyroid gland	❖ Auscultate each lobe of the thyroid gland for a bruit using the bell of the stethoscope. ❖ A bruit indicates increased vascularity, which typically occurs in Graves' disease.
Reflexes	❖ Reflexes are assessed to screen for hyporeflexia, which is associated with hypothyroidism. The most commonly tested reflexes are the biceps reflex or the knee jerk reflex (you only need to assess one). ❖ **Biceps reflex** o With the patient's arm relaxed, locate the biceps brachii tendon which is typically found at the medial aspect of the antecubital fossa. o Place the thumb of your non-dominant hand over the tendon and then tap your thumb with the tendon hammer. o Observe for a contraction of the biceps muscle and associated flexion of the elbow. ❖ **Pretibial myxedema** o It usually presents itself as a waxy, discolored induration of the skin on the anterior aspect of the lower legs (pre-tibial region). Pretibial myxedema is a rare complication of Graves' disease. ❖ **Proximal myopathy** o Proximal myopathy is a potential complication of both multinodular goitre and Graves' disease. Patients develop wasting of their proximal musculature causing difficulties in tasks such as standing from a sitting position. o To screen for proximal myopathy, ask the patient to stand from a sitting position with their arms crossed (to minimize their ability to mask proximal muscle weakness). Make sure to stand close to the patient to prevent them from falling. An inability to stand up would suggest proximal muscle weakness
Ending the Examination	❖ Explain to the patient that the examination is now finished. ❖ **Thank the patient for their time and cover the patient**

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Que: 1 –Clinical features of Hyperthyroidism vs. Hypothyroidism

Mnemonic for Symptoms of hyperthyroidism (SWEATING)

- **S**weating
- **W**eight loss
- **E**motional (anxiety)
- **A**ppetite increased
- **T**remor/ **T**achycardia
- **I**ntolerance of heat/ **I**rregular menstruation/ **I**rritability,
- **N**ervousness
- **G**oiter and **G**I problems (diarrhea)

Mnemonic for Symptoms of hypothyroidism (MOM'S Continuously BORED)

- **M**ore common in females, occurs mainly in middle life
- **O**besity
- **M**enorrhagia
- **S**kin and hair dryness
- **C**onstipation
- **B**radycardia
- c**O**ld intolerance.
- **R**aised BP (diastolic)
- **E**nergy levels fall
- **D**epression/ **D**elayed relaxation of reflexes

	Hyperthyroidism	Hypothyroidism
General	Weight loss despite ↑ appetite Heat intolerance	Weight gain despite ↓ appetite Cold intolerance
Skin	Sweaty Pretibial myxedema	Dry skin, dry hairs
Heart	Systolic hypertension Tachycardia	Diastolic hypertension Bradycardia
Neurological	Anxiety Hyper-reflexia Irritability Tremors	Carpal tunnel syndrome Delayed relaxation of reflexes
Reproductive	Oligomenorhea, infertility	Menorrhagia, infertility
GIT	Diarrhea	Constipation
Eye	Exophthalmos (graves disease)	
Labs	↑ T3 and T4 ↓TSH	↓T3 and T4 ↑TSH

Que: 2 ---what is Goitre?

- Is a general term for enlargement of the thyroid
- Causes:
  - Smooth/diffuse→ Graves' disease, Hashimoto thyroiditis, *Iodine deficiency*, TSH-secreting pituitary adenoma, physiological (in puberty and pregnancy)
  - Nodular → Toxic multinodular goitre, Thyroid adenoma, Thyroid cancer, Thyroid cy

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Que: 3 ----------Thyroid function tests?

Diagnosis	TSH	Free T4	Notes
Thyrotoxicosis (e.g. Graves' disease)	Low	High	❖ In T3 thyrotoxicosis the free T4 ❖ will be normal
Over-replacement with Thyroxine	Low	High	❖ fT3 Normal or high
TSH-secreting tumor	High	High	❖ fT3 high
Untreated hypopituitarism (Secondary hypothyroidism)	Low/Low normal	Low/Low normal	❖ fT3 Low/Low normal ❖ Replacement steroid therapy is ❖ required prior to thyroxine
Primary hypothyroidism (primary atrophic hypothyroidism)	High	Low	❖
Sick euthyroid syndrome (now referred to as non-thyroidal illness)	Low**	Low	❖ Common in hospital inpatients ❖ T3 is particularly low in these ❖ Patients
Subclinical hypothyroidism	High	Normal	❖
Poor compliance with thyroxine	High	Normal	❖
Steroid therapy	Low	Normal	❖ Similar to (Subclinical hyperthyroid)

- **Non-compliant**
  - The TSH level is high. This implies that over recent days/weeks her body is thyroxine deficient. However, her free T4 is within normal range.
  - The most likely explanation is that she started taking the thyroxine properly just before the blood test.
  - This would correct the thyroxine level but the TSH takes longer to normalize.
- **TSH-secreting adenoma**
  - If free T4 and T3 are high, but TSH is normal or high, a pituitary MRI should be done to
  - look for a pituitary mass

Note:

- Also watch videos on the following as they are less important , so I haven't included them in the book---but do watch videos on it
- **Examination of Hand and Wrist**
- **Examination of Diabetic Foot**

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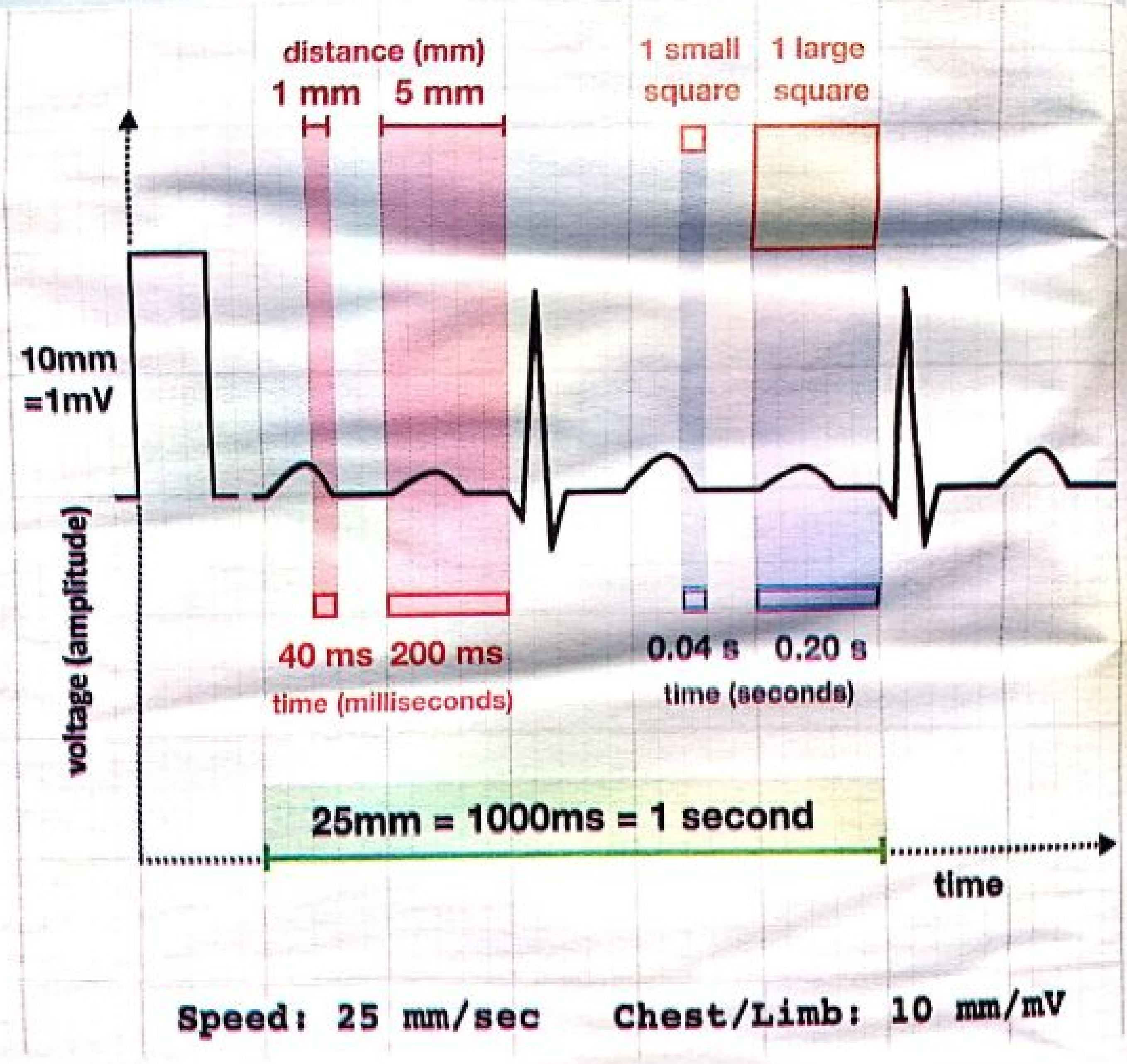
Station ECG



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Basics of ECG

ECG strip

- Normal strip = 30 large horizontal blocks =6 seconds
- Horizontal blocks--- (time interval)
  - 1 small horizontal block = 0.04 second
  - 5 small horizontal blocks = 1 large block =0.2 second
  - 5 large horizontal blocks = 1 second
- Vertical blocks---- (voltage)
  - 1 small vertical block = 0.1 mV = 1mm
  - 1 large vertical block = 0.5 mV =5 mm

ECG Leads Presentation

Infarct Location	Leads with ST Elevations or Q Waves
Anteroseptal (LAD)	V1–V2
Anteroapical (distal LAD)	V3–V4
Lateral (LCX)	I, aVL, V5–V6
InFerior (RCA)	II, III, aVF
Posterior (PDA)	V7–V9, ST depression in V1–V3 with tall R waves

Normal ECG

P wave	❖ Represents atrial depolarization
PR Interval	❖ Interval from the beginning of the P wave to the beginning of the QRS wave ❖ The normal PR interval is 120–220 ms, represented by 3–5 small squares ❖ Depends on conduction velocity through the atrioventricular (AV) node ❖ Variations examples: o Heart block → if AV nodal conduction decreases →the PR interval increases. o Stimulation of the sympathetic nervous system→ increased conduction velocity through AV node→ **PR interval is decreased** o Stimulation of parasympathetic nervous system→ decreased conduction velocity through AV node→ **PR interval is increased**
QRS Complex	❖ Represents depolarization of the ventricles. ❖ The QRS complex duration is normally 120 ms (represented by three small squares) or less.
QT Interval	❖ Is the interval from the beginning of the Q wave to the end of the T wave ❖ Represents the entire period of depolarization and repolarization of the ventricles. ❖ The QT interval varies with the heart rate. ❖ It is prolonged in patients with some electrolyte abnormalities, and more importantly it is prolonged by some drugs. ❖ A prolonged QT interval (greater than 450 ms) may lead to ventricular tachycardia.
ST Segment	❖ Is the segment from the end of the S wave to the beginning of the T wave ❖ Is isoelectric. ❖ Represents the period when the ventricles are depolarized
T Wave	❖ Represents ventricular repolarization ❖ **Tall t wave → Hyperkalemia, Inverted T wave → Hypokalemia, MI and Ischemia**
U wave	❖ **Prominent in hypokalemia, bradycardia.**
Note	❖ If the first deflection is downward, it is called a Q wave ❖ An upward deflection is called an R wave, regardless of whether it is preceded by a Q wave or not ❖ Any deflection below the baseline following an R wave is called an S wave, regardless of whether there is a preceding Q wave. This is explained later

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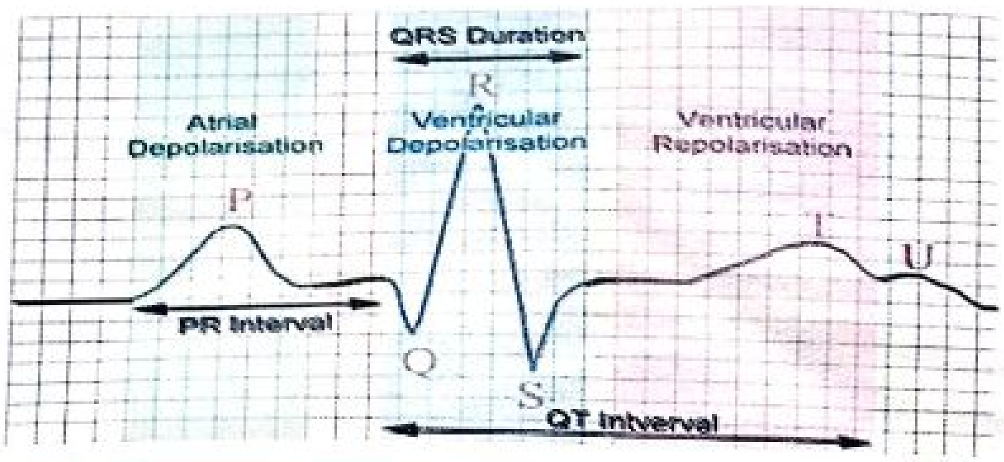
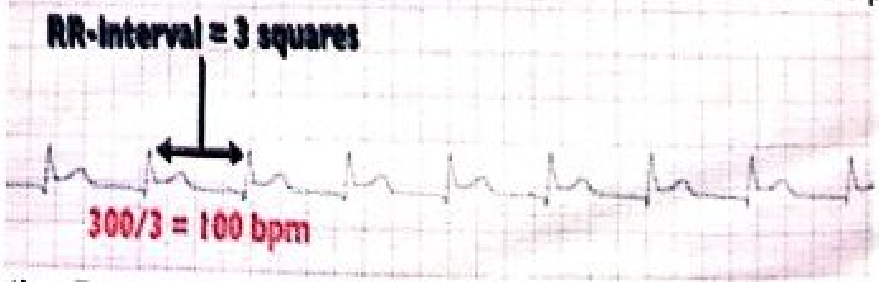
ECG



How to read an ECG---A methodical approach (12 Steps approach)

Confirm	❖ First confirm the patient's name and age, and the ECG date. Then
Technical aspects	❖ Paper speed---25mm/s ❖ Lead aVR is typically negative. If it isn't, the leads may be placed incorrectly. ❖ For example--- this ECG is normal ECG but taken at speed of 50mm/s showing slow heart rate and widened QRS complexes, even though its normal. Fig. 1.29
Rate	❖ **Calculating Rate for Regular Rhythm** ○ Method-1: Divide 1500 by the number of small squares between two R waves. ○ Method-2: Divide 300 by the number of large squares, although fast, this works only for regular rhythms ○ E.g. If there are 3 squares in an R-R interval 300/3 = 100 beats per minute  ❖ **Calculating Rate for Irregular Rhythm** ○ **10 second rule:** As most ECGs record 10 seconds of rhythm per page, one can simple record the number of R waves present on ECG and multiply by 6 to get the number of beats per 60 seconds. This method works well for irregular rhythms

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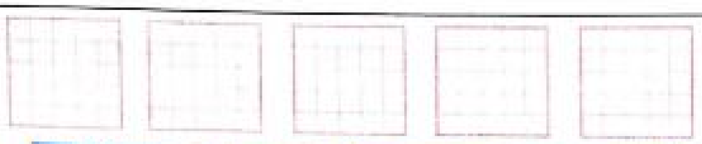
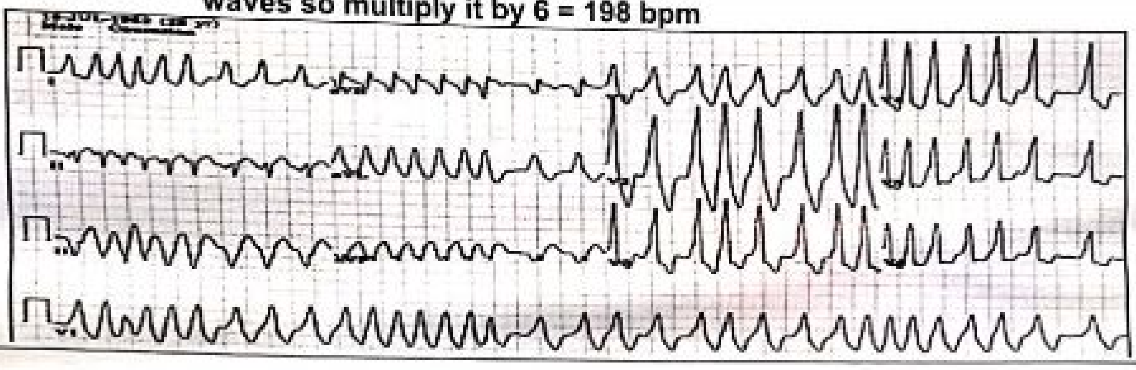


- 5 big boxes = 1 sec
- 1 ECG = 10 sets of 5 big boxes
- Therefore one ECG = 10 secs

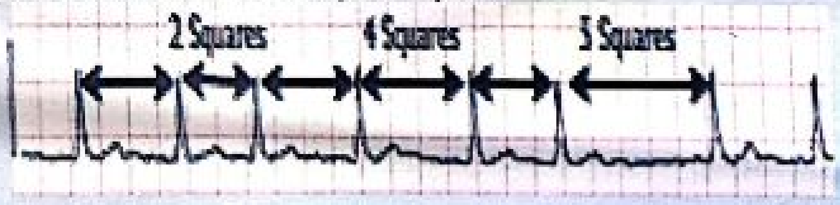
- Rate = BPM or R Waves/60secs
- 1 ECG x 6 = 1 min
- Count up R waves in one ECG x 6 = BPM

▪ **Example: E.g. as shown in figure -------in ECG below there are 33 R waves so multiply it by 6 = 198 bpm**



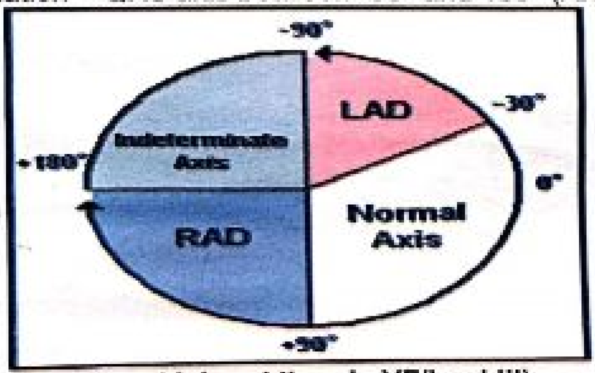
Rhythm

- Heart rhythm can be either regular or irregular
- This can be determined by looking again at the R-R wave interval
- If the R-R interval is inconsistent then the rhythm would be classed as irregular
- Abnormalities
  - Atrial fibrillation-----An irregular rhythm with no distinct p waves suggests atrial fibrillation
  - Sinus arrhythmia---- Slight but regular lengthening and then shortening (with respiration)— common in the young
  - ECG below shows an irregular rhythm



Axis

- Normal Axis = QRS axis between -30° and +90°.
- Left Axis Deviation = QRS axis less than -30°.
- Right Axis Deviation = QRS axis greater than +90°.
- Extreme Axis Deviation = QRS axis between -90° and 180° (AKA "Northwest Axis").



- **Three Lead analysis – (Lead I, Lead II and aVF/lead III)**
  - Lead III *or* aVF can *both* be used in three lead analysis—more accurate approach

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Summarized in fig below

	Normal Axis (0 to +90°)	LAD PHYSIOLOGICAL (0 to -30°)	LAD PATHOLOGICAL (-30° to -90°)	RAD (90° to 180°)	Extreme Axis (-90° to -180°)
LEAD I	POSITIVE	POSITIVE	POSITIVE	NEGATIVE	NEGATIVE
LEAD II	POSITIVE	EQUIPHASIC	NEGATIVE	POSITIVE	NEGATIVE
LEAD III or aVF	POSITIVE	NEGATIVE	NEGATIVE	POSITIVE	NEGATIVE

Causes of Deviation

- Right axis deviation (Mnemonic – **RALPH--PCW**)
  - **R**ight ventricular hypertrophy
  - **A**ntero**L**ateral myocardial infarction
  - Left **p**osterior **h**emiblock
  - **P**ulmonary embolus
  - **C**hronic lung disease even without pulmonary hypertension
  - **W**olff-Parkinson-White syndrome (LEFT-sided accessory pathway)
- Left axis deviation (Mnemonic – **VILLA hates Wolves**)
  - **V**entricular tachycardia
  - **I**nferior myocardial infarction
  - **L**eft ventricular hypertrophy (arguably)
  - **L**eft **A**nterior **h**emiblock
  - **W**olff-Parkinson-White syndrome (Right sided accessory pathway)

Mnemonic to remember deviation

- Thumbs up method:
  - Lead I = Left thumb, Lead II = Right thumb.
  - Left leaves against each other, *Right Returns*
- Wait, why lead I is left thumb and lead II is the right thumb?
- Because left (4 words) is a smaller word and it gets the smaller number, that is, one!
- Right (5 words) has more alphabets and it gets the bigger number, that is, two.
- Left thumb up (I) + Right thumb up (II) = Normal.
- Left thumb up (I) + Right thumb down (II) = LAD.
- Left thumb down (I) + Right thumb up (II) = RAD.

P wave

- Next, we look at the p waves & comment on a number of things;
- Are P-waves present?
- Do they occur regularly?
- Is there sinus rhythm (does a P-wave precede each QRS complex?)
- Do the P-waves look normal? (smooth, rounded & upright)
- Normally:
  - P wave normally precedes each QRS complex, and upright in II, III, & aVF but inverted in aVR.
  - Duration= less than 120 ms/ 0.12 second (shorter than 3 small boxes)
  - Amplitude = less than 2.5 mm (less than 2.5 small boxes) in the limb leads, < 1.5 mm in the precordial leads
- Abnormality
  - Absent P wave with irregular rhythm-------- Atrial Fibrillation
  - Peaked P waves (> 0.25 mV) ---suggest right atrial enlargement, cor-pulmonale (seen in COPD), Hypokalaemia
  - Bifid P waves (known as P mitrale) indicate------------left-atrial abnormality-in this height remains the same the durations get prolonged

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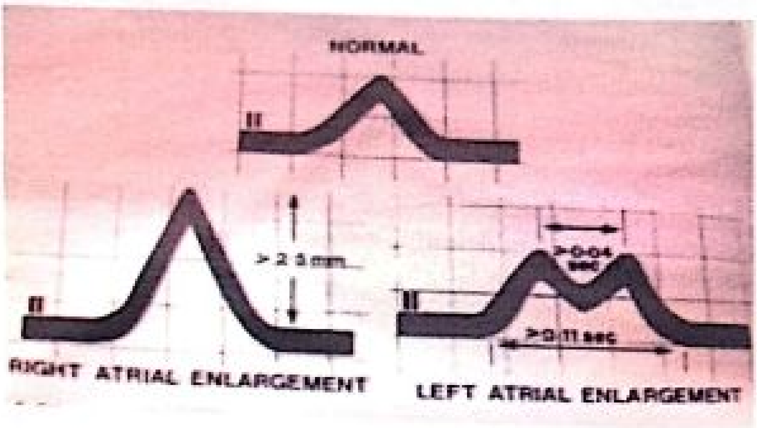
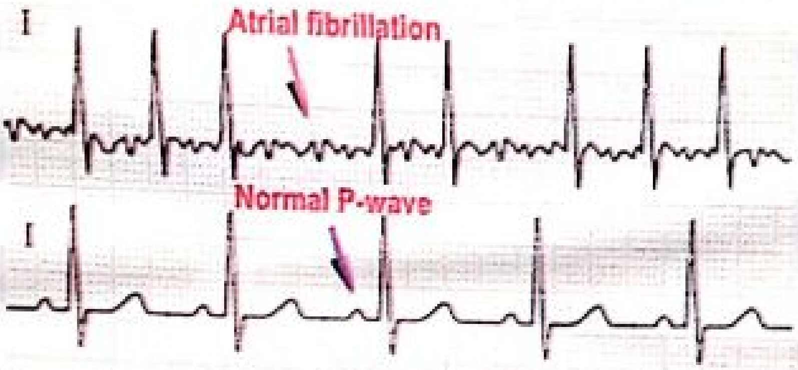
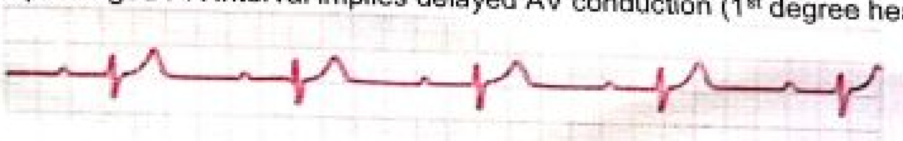
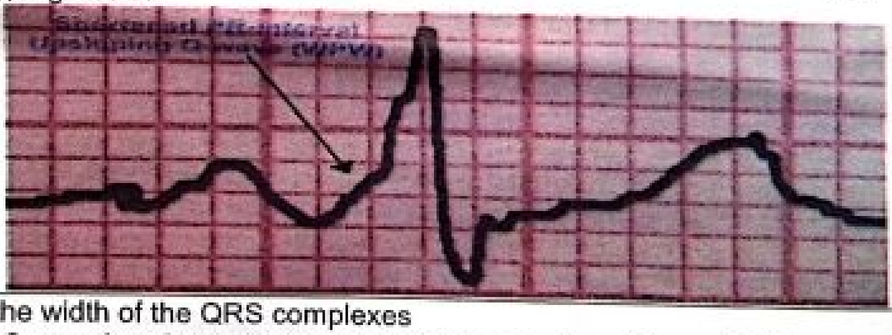
	 
PR Interval	❖ Measure from start of P wave to start of QRS ❖ The P-R interval should be between 0.12-2.0 seconds (3-5 small squares) ❖ Abnormality ❖ A prolonged PR interval implies delayed AV conduction (1st degree heart block).  ❖ A short PR interval implies unusually fast AV conduction down an accessory pathway, e.g. WPW 
QRS Complex	❖ Check the width of the QRS complexes ❖ The QRS complex should be less than 0.12 seconds or 3mm wide (3 small squares) ❖ If longer than 0.12 seconds it suggests the complex originated in the ventricles ❖ If shorter than 0.12 seconds it suggests the complex is supra-ventricular in origin ❖ <u>**QT Interval**</u> o Measure from start of QRS to end of T wave. It varies with rate. o Calculate corrected QT interval (QTc) by dividing the measured QT interval by the square root of the cycle length, o I.e. QTc=QT Divided by √RR. o Normal QTc: 0.38–0.42s (2 large horizontal blocks).

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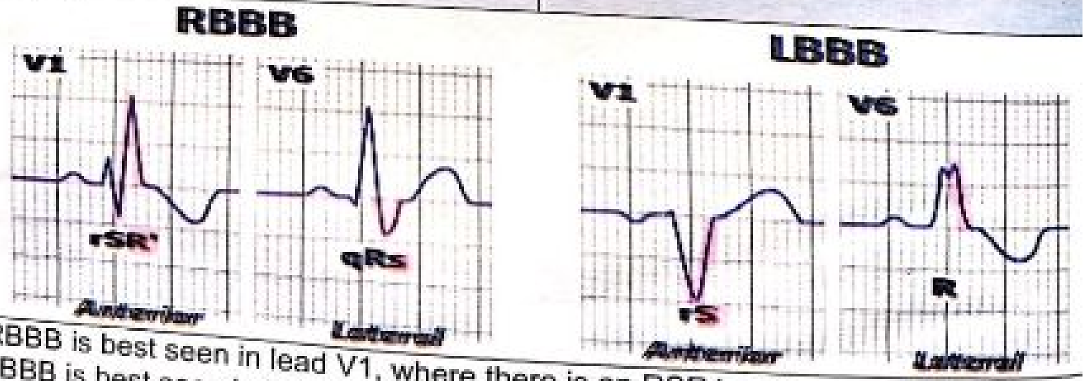
ECG

Prolonged QT interval	Decreased QT interval
❖ Risk of Torsades de Pointes (a lethal ❖ tachyarrhythmia)	❖ Risk of V-Fib
❖ Causes: ○ Genetic Long QT Syndrome (Romano–Ward) ○ Drugs: antibiotics, SSRIs, antipsychotics, antiarrhythmics ○ Electrolytes: low Ca2+, low Mg2+, low K+ ○ Others: hypothyroidism, hypothermia, cardiomyopathy	❖ Causes: ○ Electrolytes: high Ca++ ○ Drugs: digoxin ○ Others: hyperthyroidism

Bundle Branch Block

RBBB (Right bundle branch block)	LBBB (Left bundle branch block)
❖ It results from interruption of right brunch of the bundle of HIS, which delays activation of the right ventricle ❖ An 'RSR'' pattern, with a QRS complex of normal width (less than 120 ms), is sometimes called 'partial right bundle branch block'.	❖ It results from interruption of left brunch of the bundle of HIS, which delays activation of the left ventricle
❖ Findings on ECG: • QRS complex duration more than 0.12 second • Tall double R wave "RSR' pattern (M pattern) in lead **V1**" • Deep S wave in lead-I and **V6** • Mnemonic: Ma RRo W----- M pattern in lead V1, W pattern in lead V5-V6, RR for Right bundle branch block	❖ Findings on ECG: • QRS complex duration more than 0.12 second • Tall double R wave "RSR' pattern (M pattern) in lead **V6**" • Deep S wave in **V1** • Mnemonic: WiLLia M-----W pattern in lead V1, M pattern in lead V6, LL for Left bundle branch block
❖ Causes: • Normal variant ---may develop due to inc heart rate • Atrial septal defect • Right ventricular hypertrophy • Pulmonary embolism • IHD	❖ Causes: • IHD • Hypertension • Cardiomyopathy • Idiopathic fibrosis



❖ RBBB is best seen in lead V1, where there is an RSR1 pattern
❖ LBBB is best seen in lead V6, where there is a broad QRS complex with a notched top, which resembles the letter 'M' and is therefore known as an 'M' pattern. The complete picture, with a 'W' pattern in lead V1, is often not fully developed.

ST-Segment

❖ The ST segment is the part of the ECG between the end of the S wave & start of th T wave
❖ In a healthy individual it should be an isoelectric line (neither elevated nor depressed)

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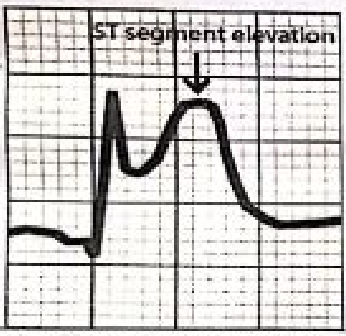
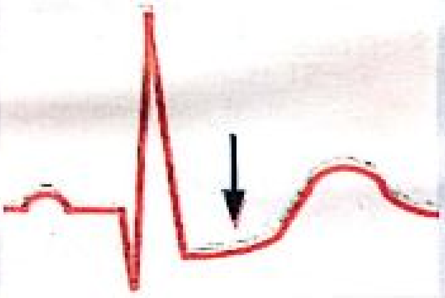
- ❖ Abnormalities of the ST segment should be investigated to rule out pathology
- ❖ <u>ST Elevation</u>
  - o ST elevation is significant at least >1 mm (>1 small square) in 2 adjacent limb leads or at least 1-2 mm in adjacent precordial leads when it is > 1mm (1 small square) in relation to the baseline
  - o It is most commonly caused by myocardial infarction
  - o The morphology of the ST elevation differs depending on how long ago the MI occurred
- ❖ <u>ST Depression</u>
  - o ST depression is significant when it is >1mm (1 small square) in relation to the baseline
  - o ST-depression lacks specificity, therefore you shouldn't jump to any diagnostic conclusions
  - o It can be caused by many different things including;
  - o Anxiety, Tachycardia, Digoxin toxicity, NSTEMI, Hypokalaemia
  - o As a result, you must take this ECG finding & apply it in the context of your patient





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<td>T waves</td>
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- ❖ <u>Are the T waves inverted?</u>
  - o Inverted T waves are one of the most common abnormalities found on ECG
  - o This is because T-waves can be altered by many different processes
  - o As a result, they lack specificity & should not use alone to form a diagnosis,
  - o Some of the causes of inverted T-waves are: Smoking, Anxiety, Tachycardia, Haemorrhage & Shock, Hypokalaemia, MI (new & previous)
  - o As a result, you must take this ECG finding & apply it in the context of your patient
- ❖ <u>Are the T-waves Tall?</u>
  - o A T-wave is considered tall when it is greater than;
    - 5mm in the standard leads
    - 10mm in the precordial leads
  - o Tall T-waves can be
    - **Normally inverted in aVR, V1 and occasionally V2. Abnormal if inverted in I**
    - caused by; Hyperkalaemia Myocardial Ischemia (usually hyper-acute MI)
    - In hyperkalaemia the T-waves are described as "Tall Tented T-waves", This is because alongside been tall they are also very narrow, with a sharp apex
    - In hyper-acute MI you also get tall T-waves however they are not as narrow as in hyperkalaemia

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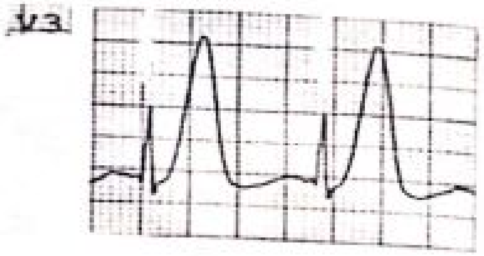
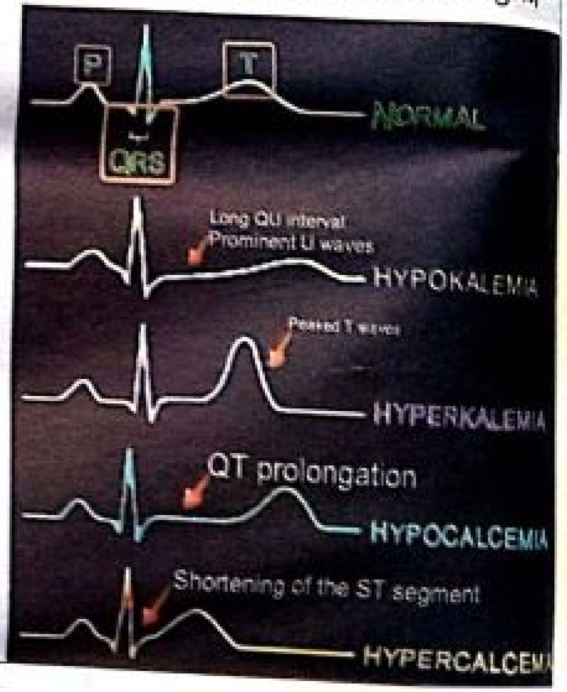
ECG

	Hyperkalemia **Symmetric, narrow-based, pointed, tenting** **Hyperacute Ischemia**  **Symmetric, broad-based, not tented, not pointed**
Electrolyte disturbances	❖ Hyperkalaemia ○ Mild to moderate (K+ 5-7 mmol/L): tall peaked T waves ○ Severe (K+ >7 mmol/L): progressive changes whereby P waves flatten and disappear, QRS widens and may show bizarre patterns, axis shifts left or right, ST shift with tall T waves, eventually becomes a "sine wave" pattern ❖ Hypokalemia ○ ST segment depression, prolonged QT interval, low T waves, prominent U waves (U>T) ○ enhances the toxic effects of digitalis ❖ Hypercalcemia ○ Shortened QT interval (more extracellular Ca2+ means shorter plateau in cardiac action potential) ❖ Hypocalcemia ○ Prolonged QT interval (less extracellular Ca2+ means longer plateau in cardiac action potential) 

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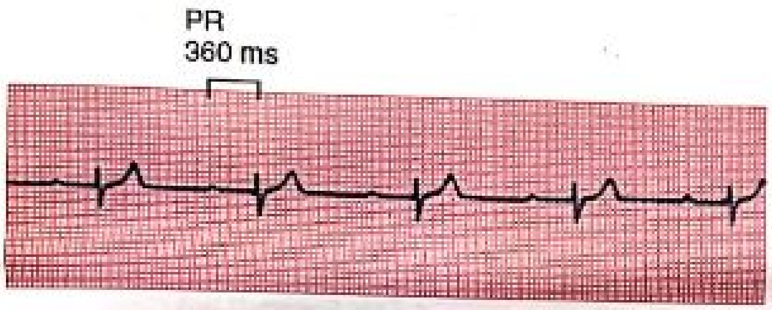
Some Common ECG Tracing

First degree AV block

- It is AV block in which PR interval is prolonged (>200mSec/ 0.2sec/ 1 large block)
- It has no missed beats i.e. every P wave is followed by QRS complex
- Causes:
  - AV nodal disease
  - Increased vagal tone (e.g. athletes)
  - Drugs (e.g. Beta blockers, Ca++ channel blocker, Digoxin)
  - Ischemia
  - Infarction



Note
- One P wave per QRS complex
- PR Interval 360 ms

2nd degree AV block

- In this condition dropped beats occur because some impulses from the atria fail to conduct to the ventricles.
- It is of two types----Mobitz type-I and Mobitz type II

Type	Mobitz type- I (aka Wenckebach phenomenon)	Mobitz type II
Definition	It is characterized by progressive lengthening of PR interval until a dropped beat occurs, and the cycle is repeated	It is characterized by a dropped beat without progressive lengthening of PR interval There may be alternate conducted and non-conducted atrial beats (or one conducted atrial beat and then two or three non-conducted beats), giving twice (or three or four times) as many P waves as QRS complexes. This is called '2:1' two to one'), '3:1' ('three to one' or '4:1' ('four to one') conduction
Pathology	Abnormality in AV node	Abnormality in-HIS-Purkinje system
Risk	Low risk as compared to Mobitz type-II	More dangerous as compared to type-I it is associated with risk of asystole and cardiac arrest
Treatment	Removal of the offending drug or cause Asymptomatic= No treatment Symptomatic patients= Atropine and transcutaneous pace maker	Removal of the offending drug or cause Asymptomatic or symptomatic patients= Pacemaker
Note	It is important to remember that, as with any other rhythm, a P wave may only show itself as a distortion of a T wave. Pure 2:1 conduction pattern cannot be reliably classified as Mobitz type I or type II by ECG alone, and if diagnostic maneuvers (such as exercise) are not able to elucidate one type of second-degree block versus the other, an EPS may be warranted.	

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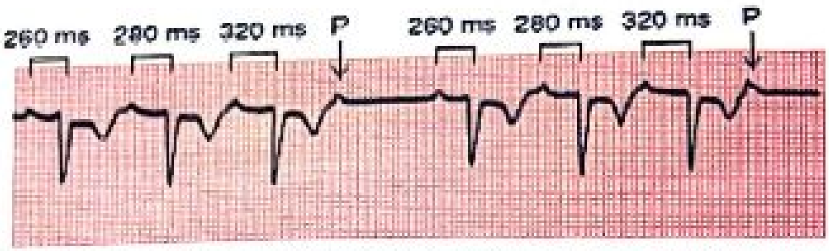
Fig. 2.3

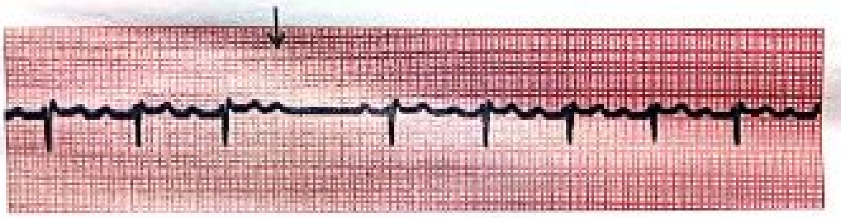
Second degree heart block (Wenckebach (Mobitz type 1))



Note
- Progressive lengthening of the PR interval
- One nonconducted P wave
- Next conducted beat has a shorter PR interval than the preceding conducted beat
- As with any other rhythm, a P wave may only show itself as a distortion of a T wave

Fig. 2.4

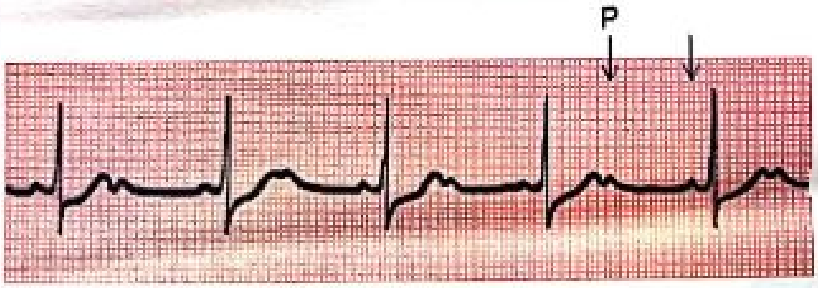
Second degree heart block (Mobitz type 2)



Note
- PR interval of the conducted beats is constant
- One P wave is not followed by a QRS complex

Fig. 2.5

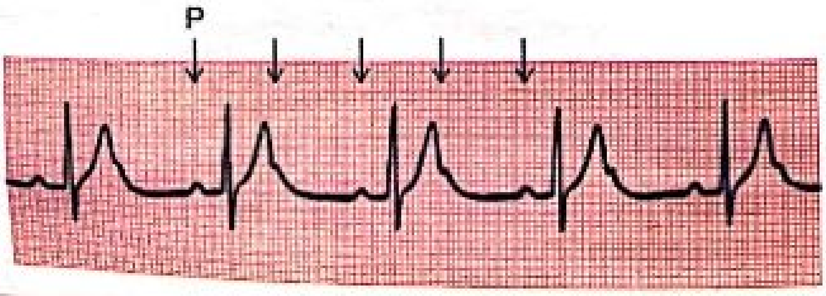
Second degree heart block (2:1 type)



Note
- Two P waves per QRS complex
- Normal, and constant, PR interval in the conducted beats

Fig. 2.6

Second degree heart block (2:1 type)



Note
- P wave in the T wave can be identified because of its regularity

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3rd degree or Complete heart block

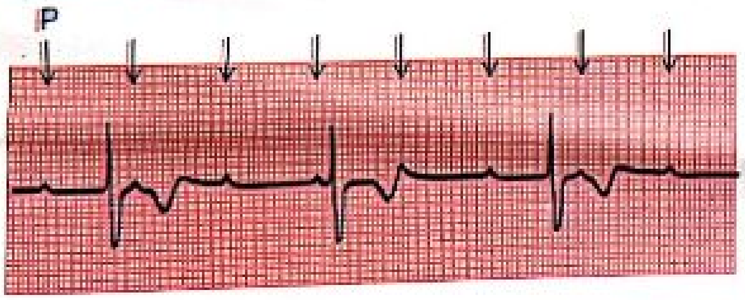
- It is characterized by no conduction through the atrioventricular node (AVN) so the atria and ventricles beat independently
- Ventricular activity is maintained by an escape rhythm arising in the AV node or bundle of His
- Causes:

Congenital	❖ Autoimmune (e.g. maternal SLE) ❖ Structural heart disease (e.g. transposition of the great vessels)
Acquired	❖ Myocardial infarction/ischemia ❖ Cardiac surgery -----e.g. following aortic valve, replacement, CABG, VSD repair ❖ Infections------e.g. Endocarditis, Lyme disease, Chagas' disease ❖ Drugs: Beta blockers, Ca++ channel blockers,

- Features:
  - Syncope, dizziness, acute heart failure
  - Severe chest pain
  - Sudden death
  - Cannon A waves (waves visible in neck due to large volume pulse from compensatory increase in stroke volume)
- Presentation on ECG:
  - Constant ventricular rate (i.e. constant R-R interval), and regular atrial rate (i.e. Constant P-P interval)
  - QRS complexes may be narrow (above the HIS bundle), or wide (at or below HIS bundle) depending on the location of block
  - Atria and ventricles beat independently of each other
  - **Note: to differentiate between 2:1 block or complete heart block—look at the PR interval, in Mobitz type 2 2:1 block PR interval is constant while in third degree PR interval varies**

Fig. 2.7

Third degree heart block



Note
- P wave rate 90/min
- No relationship between P waves and QRS complexes
- QRS complex rate 36/min
- Abnormally shaped QRS complexes, because of abnormal spread of depolarization from a ventricular focus

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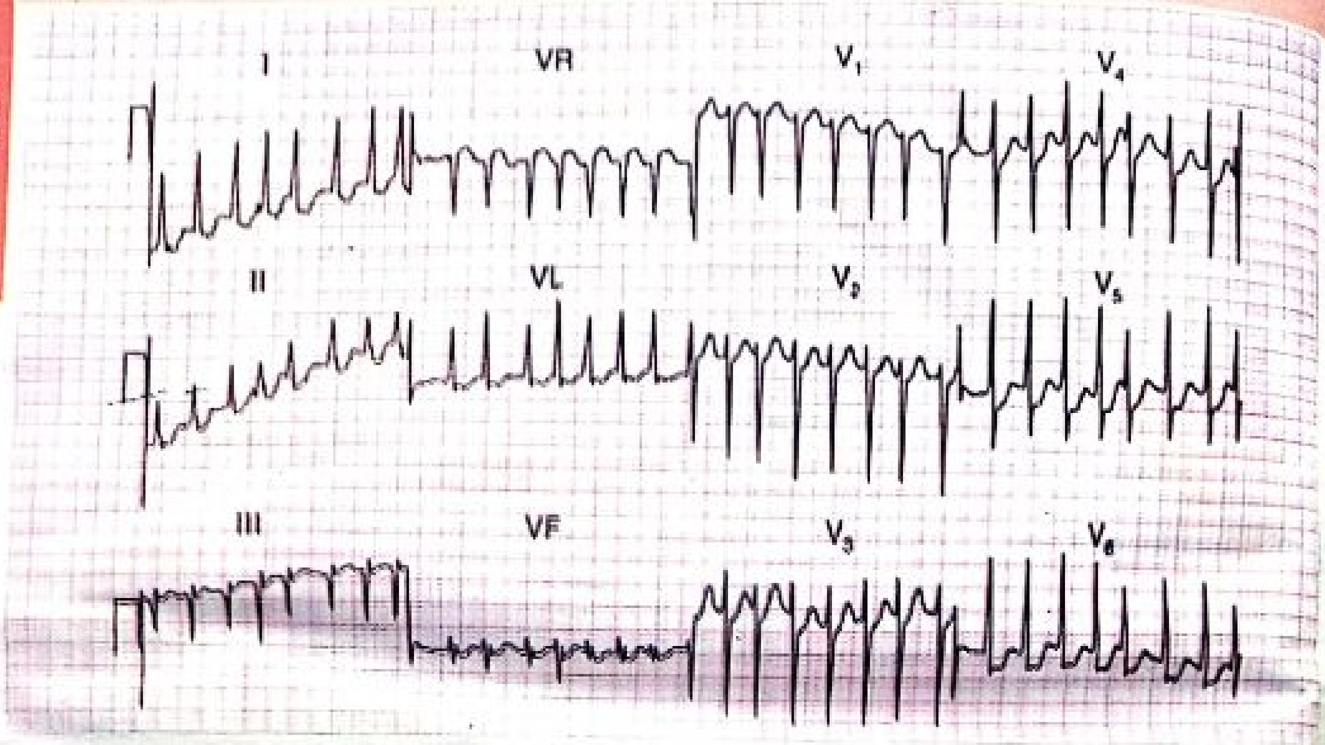
Atrial Fibrillation



Interpretation	The ECG shows: ❖ Hear rate—upto 200/min ❖ Absent P wave, Irregular R-R interval ❖ Normal axis ❖ Normal QRS complexes
Diagnosis	❖ Atrial Fibrillation with rapid ventricular rate
Causes	(Mnemonic ---C(sea)-PIRATES) ❖ CHF ❖ Pulmonary embolism, Post-operative (thoracic or cardiac surgery,) ❖ Ischemic heart disease (Including MI), Idiopathic (Lone atrial fibrillation) ❖ Rheumatic heart disease (Mitral stenosis, Mitral regurgitation) ❖ Atrial myxoma, Alcohol (excess and sudden withdrawal) ❖ Thyrotoxicosis (this condition should be excluded with the initial episode). ❖ Elevated blood pressure (Hypertension), Electrolytes disturbance (Dec K, Dec Mg) ❖ Sleep apnea, Sepsis
Classification	❖ Paroxysmal AF→ that terminates spontaneously in <7 days and <48 hours in duration ❖ Persistent→ Sustained for >7 days, but can be terminated by chemical or electrical cardioversion ❖ Permanent→ Typically >1 y and when cardioversion has failed or in which clinical judgement has led to a decision not to pursue cardioversion
Treatment	❖ Hemodynamically unstable patients o Hemodynamically unstable patients (e.g. shock or severe hypotension, pulmonary edema, or ongoing myocardial infarction) needs Urgent electrical cardioversion o Shock is administered in **synchrony with the R wave**. ❖ Hemodynamically stable patients o **Step: 1 Rate control:** Beta-blocker or calcium channel blocker (orally or intravenously) is usually the first-line agent, **Digoxin should be used if there is co-existing heart failure** o **Step 2: Prevention of thromboembolic complications**

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- Asses for the risk of thromboembolic events and decide for Anticoagulation by using CHADS$_2$Vasc score

CHA$_2$DS$_2$-VASc score New recommended scoring system			
C	CHF or LVEF <40%	1	**Score = O** –no antithrombotic therapy
H	Hypertension	1	
A$_2$	Age ≥75 years	2	
D	Diabetes mellitus	1	**Score= 1** ---Oral anticoagulation > anti-platelet therapy (If 1 score due to sex only then no antithrombotic
S$_2$	Stroke or TIA	2	
V	Vascular disease (previous MI peripheral artery disease, or aortic plaque)	1	
A	Age 65-74 years	1	**Score ≥ 2=** Oral anticoagulation
S	Female Sex	1	

- **Step 3: Rhythm control & Anticoagulation**
  - **AF < 48 hours**
    - Intravenous heparin followed by cardioversion (electrical > pharmacological)
    - Electrical cardioversion or DC cardioversion---200-360J in synchrony with R wave
    - Pharmacological cardioversion----- can be done by Class III antiaryhtmatics (Mnemonic—**AIDS** ---- **A**miodarone, **I**butilide, **D**ofetilide, **S**otalol) and Class IC (flecainide, and propafenone)
  - **AF > 48 hours (or time unknown) --------**Perform any of the following step
    - Step I-----Anticoagulate for 3 weeks with warfarin before performing cardioversion and for 4 weeks after performing cardioversion, target INR 2-3,
    - Step II----To avoid waiting for 3 weeks for anticoagulation, obtain trans-esophageal echocardiogram to look for left atrial thrombus
    - If thrombus is present then follow the step 1
    - If no thrombus—directly perform cardioversion without anticoagulation

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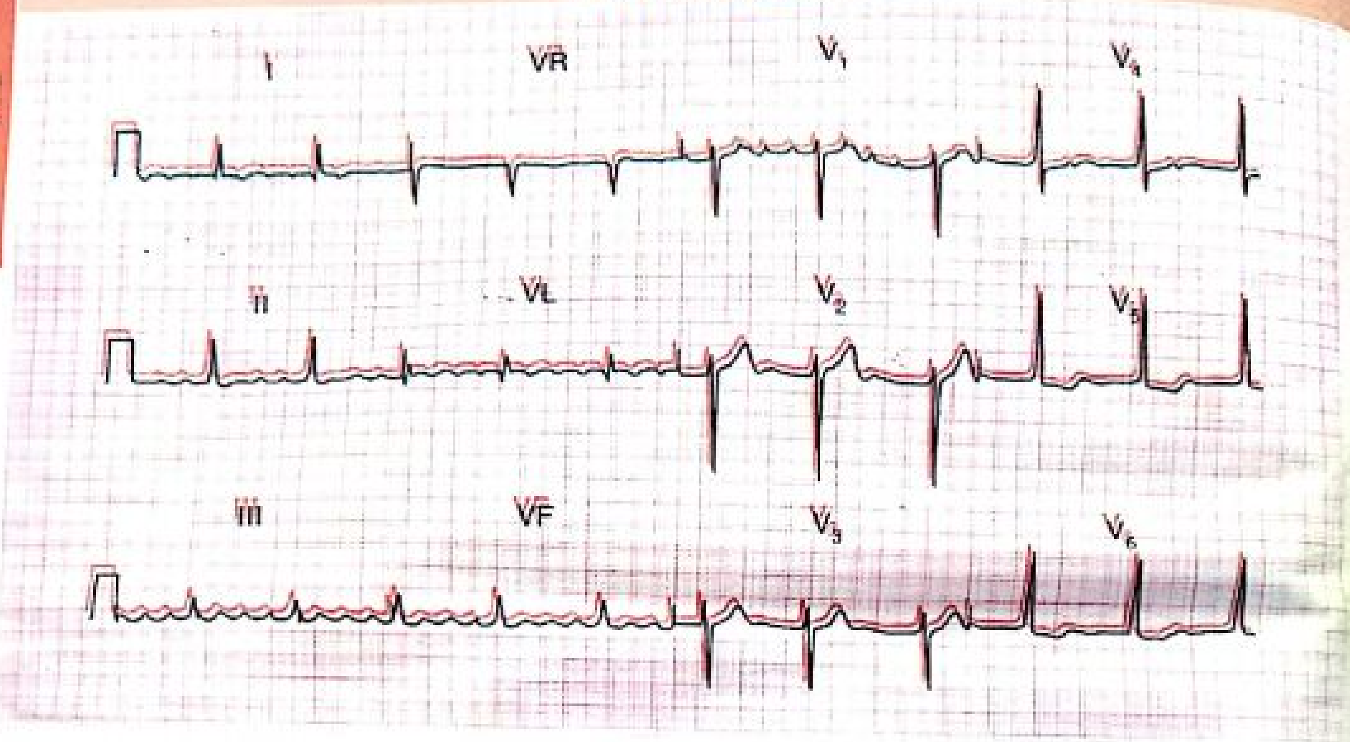
ECG

Atrial Flutter



Interpretation	The ECG shows: ❖ Ventricular rate—75/min, while atrial rate 280-300/min ❖ There are four P waves (one embedded in T wave at some areas) per QRS complex (arrowed) ❖ Normal axis ❖ Normal QRS complexes
Diagnosis	❖ Atrial flutter 4:1 Block
Causes	❖ CAD, thyrotoxicosis, mitral valve disease, cardiac surgery, COPD, PE, pericarditis
Treatment	❖ Rate control = same agents as atrial fibrillation ❖ Rhythm control and anticoagulation ○ Class I antiaryhtmatics= results in slowing of AV conduction with subsequent hemodynamic collapse. ○ Class III antiaryhtmatics (Ibutilide and amiodarone) = preferred agents ○ Electrical cardioversion or DC cardioversion • Synchronized shocks • Risk of thromboembolism equal to atrial fibrillation • Pre-cardioversion anticoagulation is not necessary for atrial flutter of less than 48 hours duration except in the setting of mitral valve disease • Anticoagulation should be continued for at least 4 weeks after electrical or chemical cardioversion ❖ **Catheter ablation = treatment of choice**

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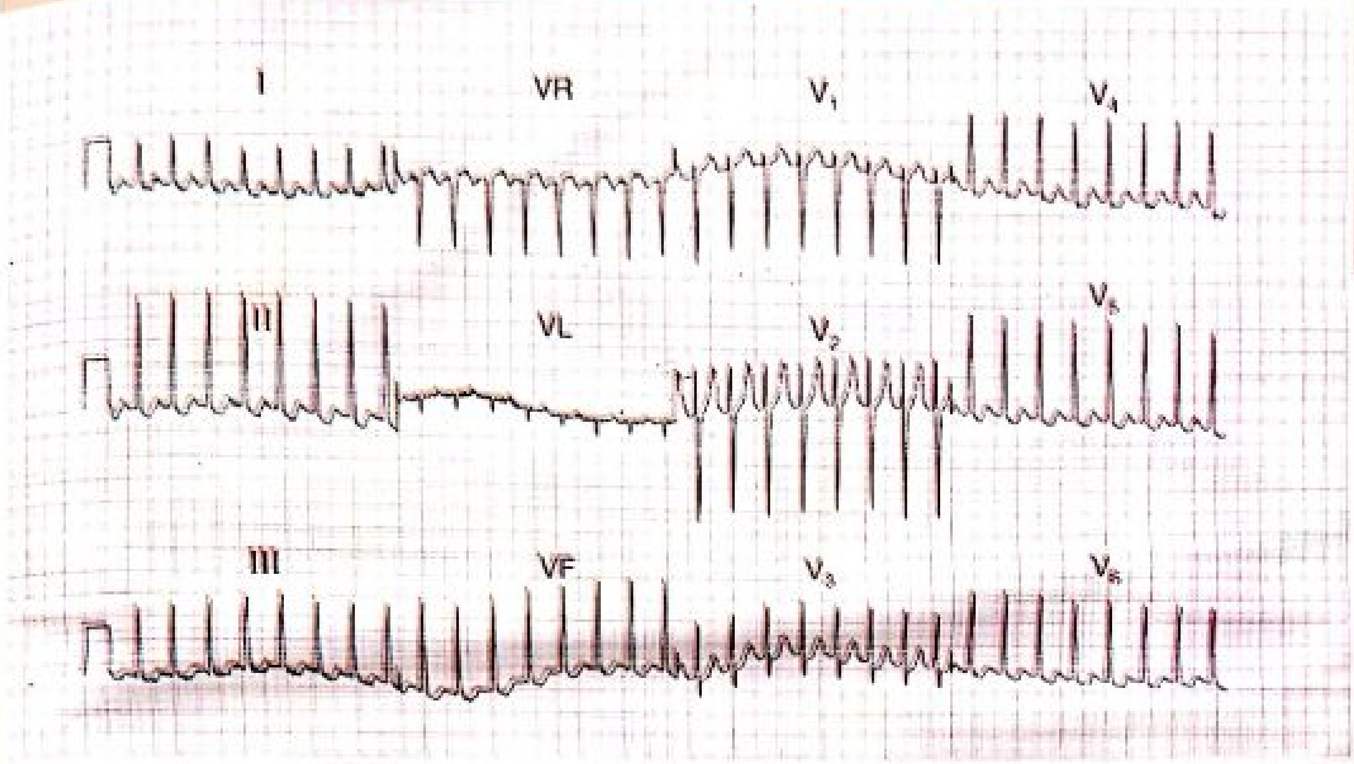
Supraventricular Tachycardia (SVT)



Interpretation	The ECG shows: ❖ Narrow complex tachycardia at 200/min ❖ No P waves visible ❖ Normal axis ❖ QRS complexes normal
Diagnosis	❖ Supraventricular tachycardia
Causes	❖ Physiological: Anxiety, tea, Alcohol. ❖ Thyrotoxicosis ❖ Ischemic heart disease ❖ Digitalis toxicity
Treatment	❖ **Hemodynamically unstable---DC Cardioversion** ❖ **Hemodynamically Stable—** o Rest and assurance o Carotid sinus massage or Valsalva maneuver –it act by increasing the vagal tone o **If no response---** ▪ Adenosine ----6mg IV bolus into a large vein, followed by 0.9% saline flush, while recording a rhythm strip. If unsuccessful, after 2 min give 12mg, then one further 12mg bolus. ▪ Warn about SE: transient chest tightness, dyspnoea, headache, flushing. ▪ Relative CI: Asthma, 2nd/3rd-degree AV block or sinoatrial disease (unless pacemaker). ▪ If adenosine fails, use verapamil ~5mg IV over 2–3min. If no response, a further 5mg IV over 3min (if age <60yrs). Alternatives: atenolol 2.5mg IV repeated at 5min intervals until 10mg given; or amiodarone. ▪ If unsuccessful, use DC cardioversion.

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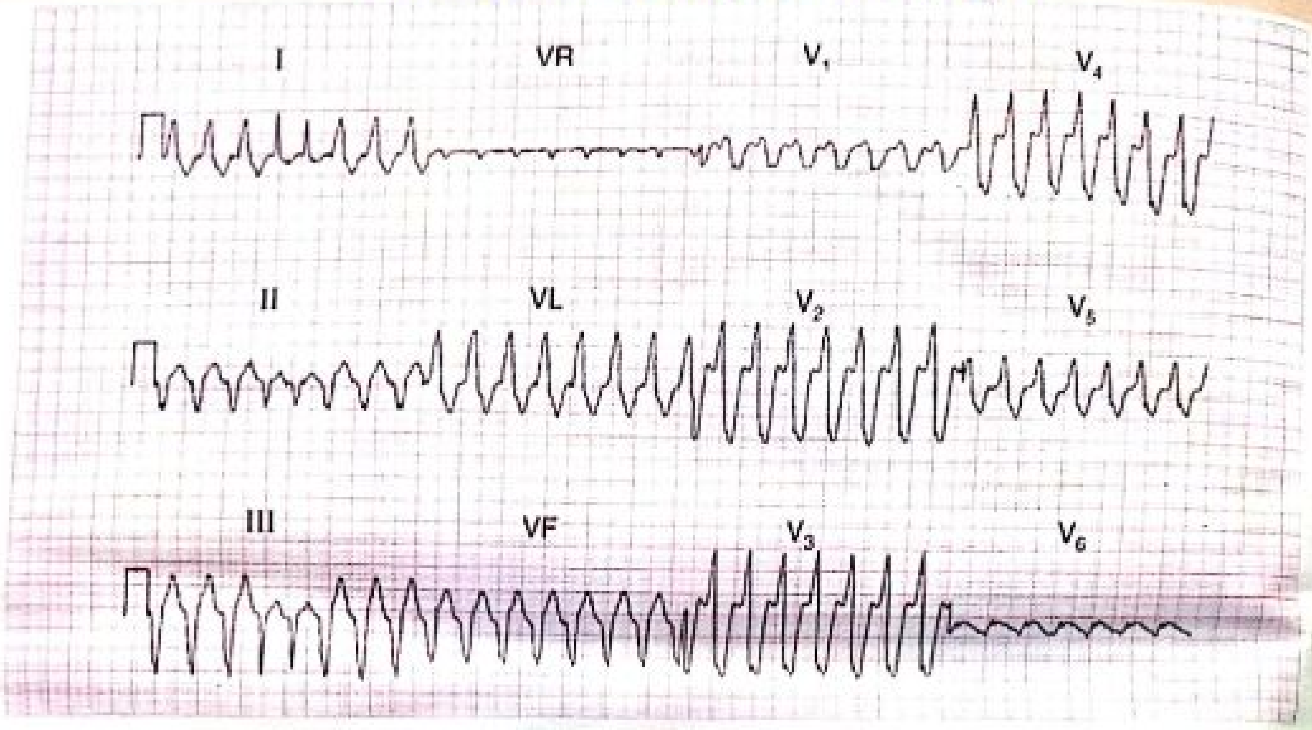
Ventricular Tachycardia (VT)



Interpretation	The ECG shows: ❖ Broad complex tachycardia at about 180/min ❖ No P waves visible ❖ Left axis ❖ QRS duration about 140 ms ❖ The fourth and fifth QRS complexes in lead 1 are narrow indicating capture and fusion beats ❖ QRS complexes are concordant (in the chest leads all point upwards)
Diagnosis	❖ Ventricular tachycardia
Causes	❖ Acute myocardial infarction/ Ischemic heart disease (Most common cause) ❖ Dilated cardiomyopathies ❖ Digitalis toxicity, which can lead to biventricular tachycardia ❖ Systemic diseases causing infiltrative cardiomyopathy or scar (eg, sarcoidosis, amyloidosis, systemic lupus erythematosus, hemochromatosis, rheumatoid arthritis) ❖ Torsades de pointes (a form of VT) ○ Severe hypokalemia, hypomagnesaemia ○ Brugada syndrome: It is a genetic disorder due to defect in sodium channel ○ Drugs (mnemonic: <u>**ABCDE**</u>) • Anti**A**rrhythmics (class IA, III), Anti**B**iotics (e.g., macrolides), Anti "**C**" ychotics (e.g., haloperidol), Anti**D**epressants (e.g., TCAs), Anti**E**metics (e.g., ondansetron)
Types	**Nonsustained VT**: ❖ ≥ 3 consecutive ventricular complexes (>100 bpm) that terminates spontaneously within 30 seconds without significant hemodynamic consequences or need for intervention **Sustained VT**: ❖ ≥ 3 consecutive ventricular complexes (>100 bpm) that lasts longer than 30 seconds with significant hemodynamic consequences & need for intervention ❖ Further classified as ○ Monomorphic VT (single QRS morphology)

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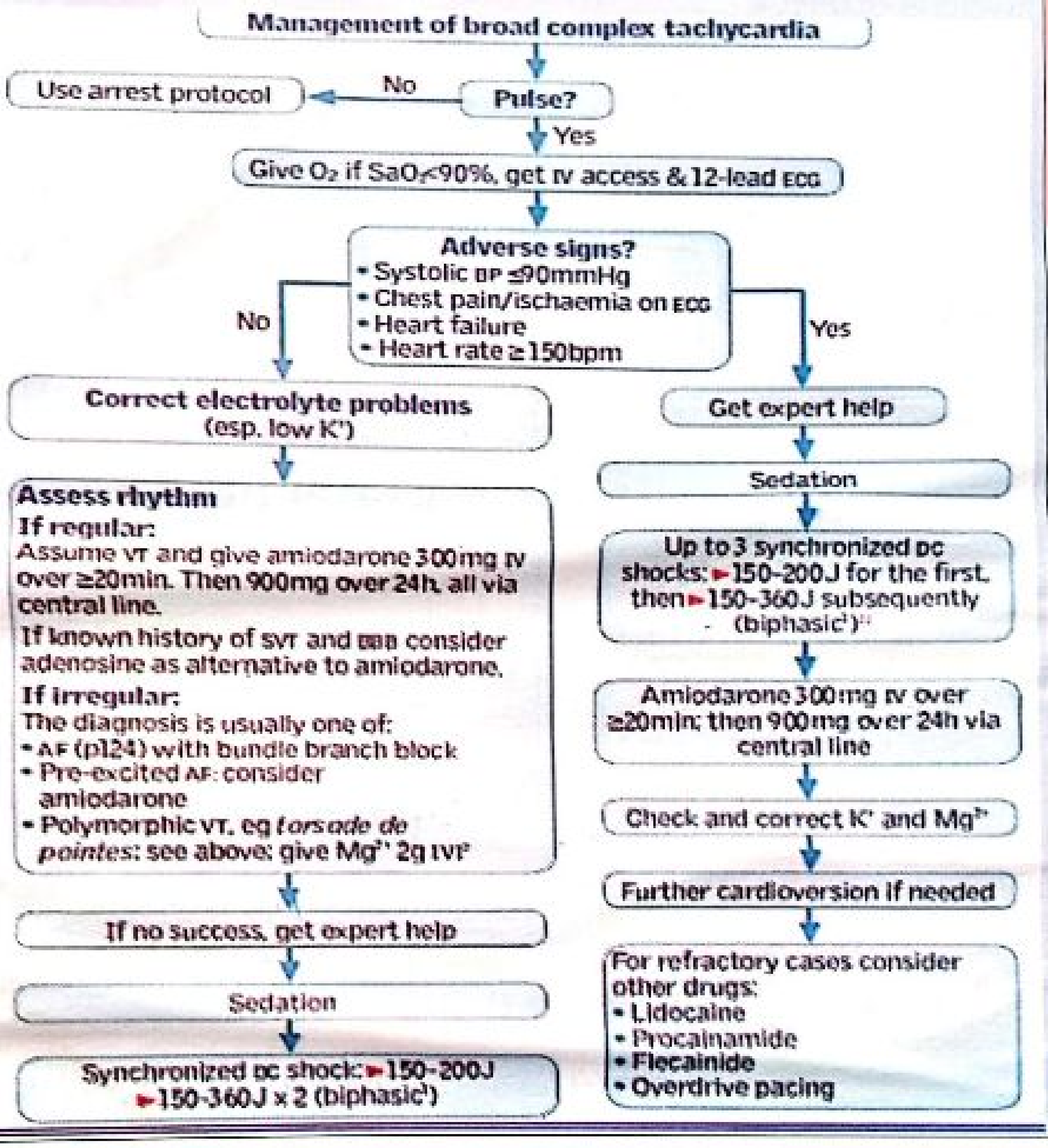
		○ Polymorphic VT (**changing QRS morphology**)
Treatment		



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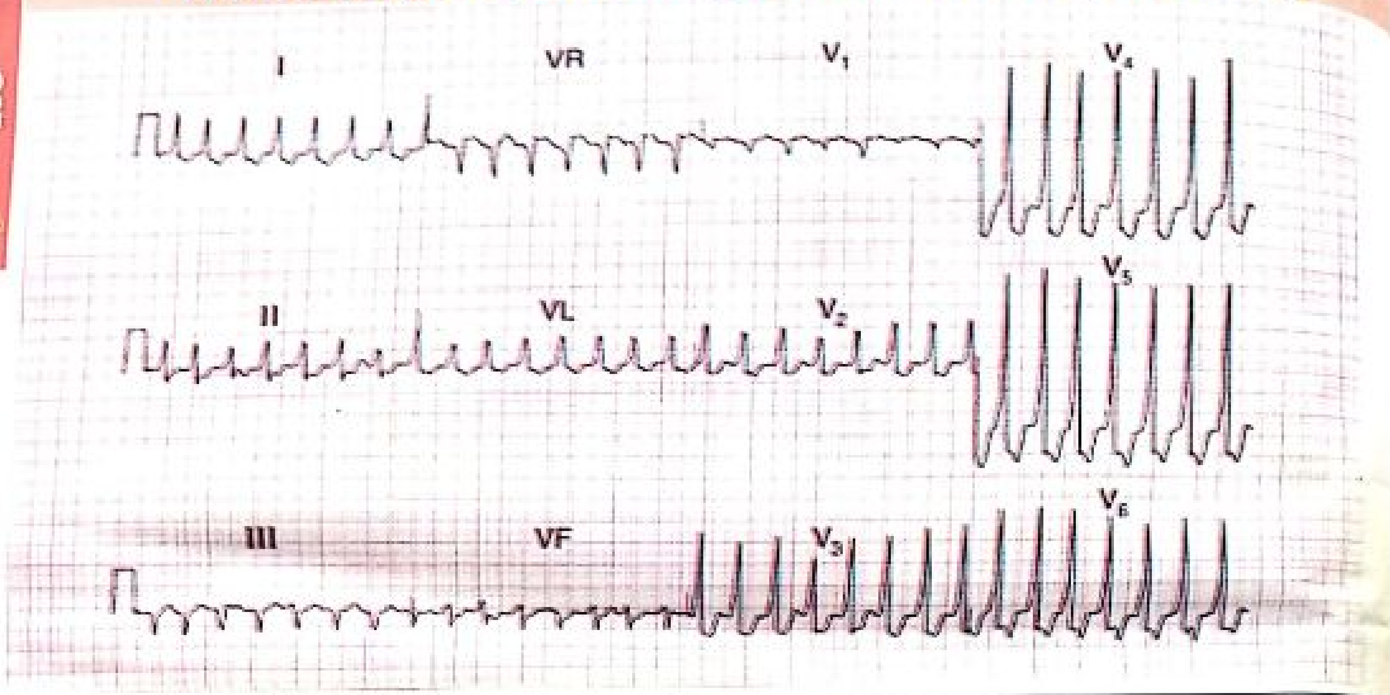
ECG

Wolff-Parkinson-White syndrome (WPW syndrome)



Interpretation	The ECG shows: ❖ Narrow complex tachycardia at about 170/min ❖ No P waves visible ❖ Normal axis ❖ QRS duration 112ms ❖ Slurred upstroke to QRS complexes, best seen in leads V3-V4 ❖ Depressed ST segments in leads V3-V6. ❖ Inverted T waves in the lateral leads
Diagnosis	❖ Supraventricular tachycardia and a Wolff-Parkinson- White syndrome.
Causes	❖ Refers to a subset of SVTs mediated by an accessory pathway which can lead to ventricular preexcitation ❖ Congenital defect present in 2/1,000 of the general population ❖ It is characterized by premature excitation of the ventricles due to an accessory pathwa from the atria known as "bundle of kent (can be in right or left atrium)" ❖ impulses travel at a greater conduction velocity across the Bundle of Kent thereby effectively 'bypassing' AV node and appearance of of initial slurring of the QRS comple – the so-called "delta wave"
Types	Tachyarrhythmias may occur – most often AVRT and A-Fib **A-Fib in WPW**: ❖ The ventricles are largely depolarized **through the accessory pathway the normal rate-limiting effects of the atrioventricular (AV) node are bypassed**, and the resultant excessive ventricular rates **AV reciprocating tachycardia (AVRT)/ Atrioventricular Re-entrant Tachycardia**: ❖ More common in females than males ❖ Arises due to an accessory pathway betwee atrium and ventricle that causes a re-entry circuit ❖ Two types ○ Orthodromic Re-entrant Tachycardia ○ Antidromic re-entrant tachycardia
Treatment	❖ Catheter ablation = treatment of choice ❖ Hemodynamically unstable = electrical cardioversion ❖ Hemodynamically stable = Pharmacologic Therapy ❖ **Do not use drugs that slow AV node conduction (digoxin, β-blockers, verapamil) as this may cause preferential conduction through the bypass tract and precipitate VF** ❖ Intravenous class Ia (procainamide) and class III (amiodarone) antiarrhythmic agents will increase the refractoriness of the bypass tract and are the medications of choice

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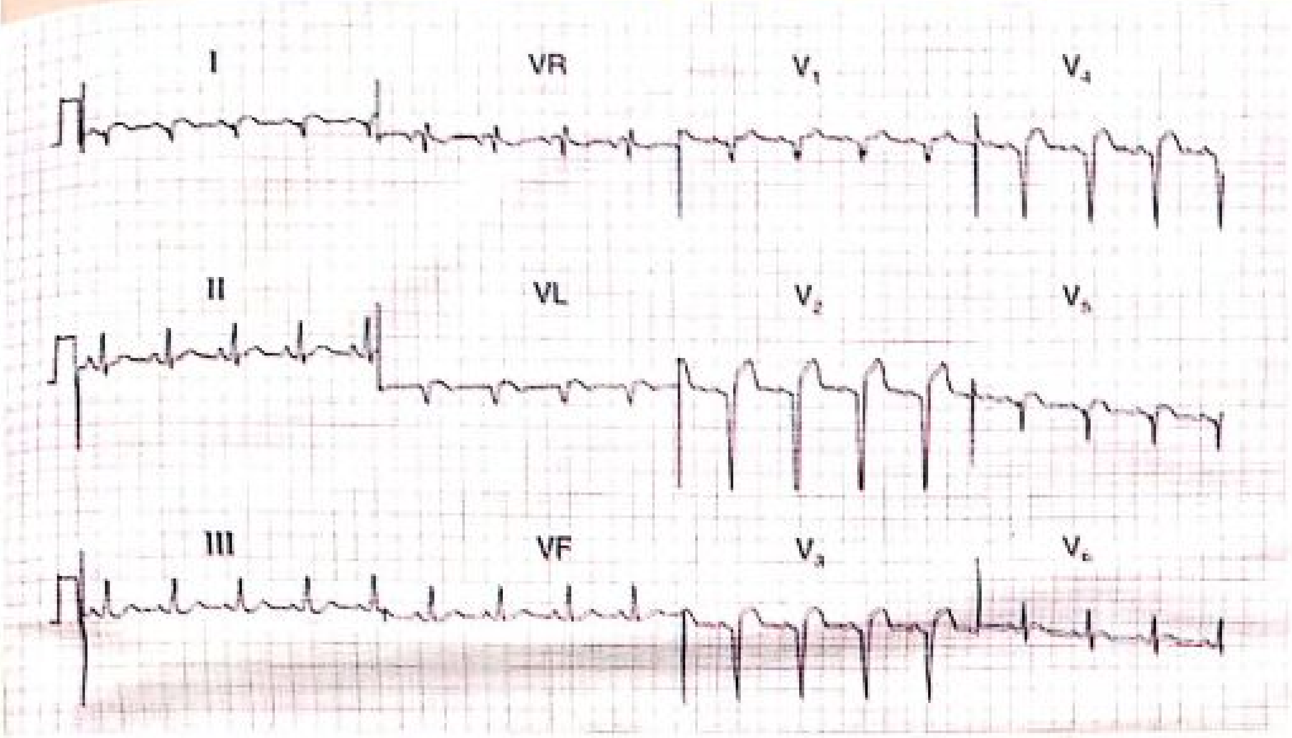
Anterolateral Wall Myocardial Infarction



Interpretation	The ECG shows: ❖ Sinus rhythm, rate 100/min ❖ Normal axis ❖ Q waves in leads I, aVL, V2-V5 ❖ Raised ST segments in leads I, aVL, V2-V6
Diagnosis	❖ Anterolateral Wall Myocardial Infarction

Some Common Questions in Acute Myocardial Infarction

Acute coronary syndrome: Term used to describe unstable angina, NSTEMI and STEMI

Unstable Angina	NSTEMI (Subendothelial Infarct)	STEMI (Transmural Infarct)
❖ Rapidly worsening angina (crescendo angina)	❖ Myocardial necrosis (coagulative) limited to the interior one-third of the wall of the left ventricle.	❖ Myocardial necrosis (coagulative) entire ventricular wall from the endocardium to the epicardium.
❖ Negative cardiac enzymes	❖ Elevated cardiac enzymes	❖ Elevated cardiac enzymes
❖ ST depression with/without T-wave inversion	❖ ST depression with/without T-wave inversion	❖ ST segment elevation

Cardiac enzymes

- ❖ **Even though these are now rarely used after the introduction of highly sensitive Trop-I which begins to rise after or within 1 hours**—but they are asked in exams as such
- ❖ Most specific=Troponin I > Trop T
- ❖ Most sensitive =Myoglobin
- ❖ CK-MB→Useful in diagnosing reinfarction following acute MI, because levels return to normal after 48 hours

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	Table below
ECG Leads presentation	❖ Septal → V1, V2---LAD artery involved ❖ Anterior → V3, V4---- LAD artery involved ❖ InFerior leads → Lead II, Lead III, and avF----RCA artery involved ❖ Lateral leads→ Lead I , avL, V5 and V6---LCX artery involved
Post Myocardial infarction complications	❖ **Day 1-** ✓ Ventricular arrhythmia, HF, cardiogenic shock. ❖ **Day 1-3** ✓ Postinfarction fibrinous pericarditis. ❖ **Day- 3 – 14** ✓ Myocardial rupture ✓ Cardiac tamponade (Becks triad) o Hypotension o Dilated neck veins. o Muffled heart sounds. ✓ Acute MR ✓ LV pseudoaneurysm (risk of rupture). ❖ **2 weeks to several months** ✓ True Ventricular aneurysm (risk of mural thrombus) ✓ Dressler's syndrome o Autoimmune fibrinous pericarditis o Characterized by pleuritic pain and fever.
Treatment	**For ST ELEVATION MYOCARDIAL INFARCTION** ❖ Aspirin o Loading dose: 162-325mg Should be given o Maintenance dose: 81 mg daily lifelong ❖ P2Y12 receptor—(Clopidogrel) o Loading dose: 300mg o Maintenance dose: 75mg for 1 year ❖ Anticoagulant o Enoxaparin (anticoagulatn of choice) or o Unfractioned hepatin and fondaparinux ❖ PCI or thrombolytic o PCI ideally should be perfomed with in 90 minutes---but time duration f[illegible] primary PCI can be perfomed upto 12 to 24 hours o Fibrinlytics window period is upto 12 hours—but most useful if given within 120 mintutes **For NSTEMI and unstable angina** ❖ Aspirin o Loading dose: 162-325mg Should be given o Maintenance dose: 81 mg daily lifelong ❖ P2Y12 receptor—(Clopidogrel) o Loading dose: 300mg o Maintenance dose: 75mg for 1 year ❖ Anticoagulant o Enoxaparin (anticoagulatn of choice) or o Unfractioned hepatin and fondaparinux

	Initial elevation	Mean time to peak	Return to baseline
Myoglobin	1-3 hours	6-9 hours	12-24 hours
CK-MB	3-4 hours	12-24 hours	2 days
Troponin I	4-6 hours	10-24 hours	7 days
LDH	8-12 hours	24-48 hours	10-14 days

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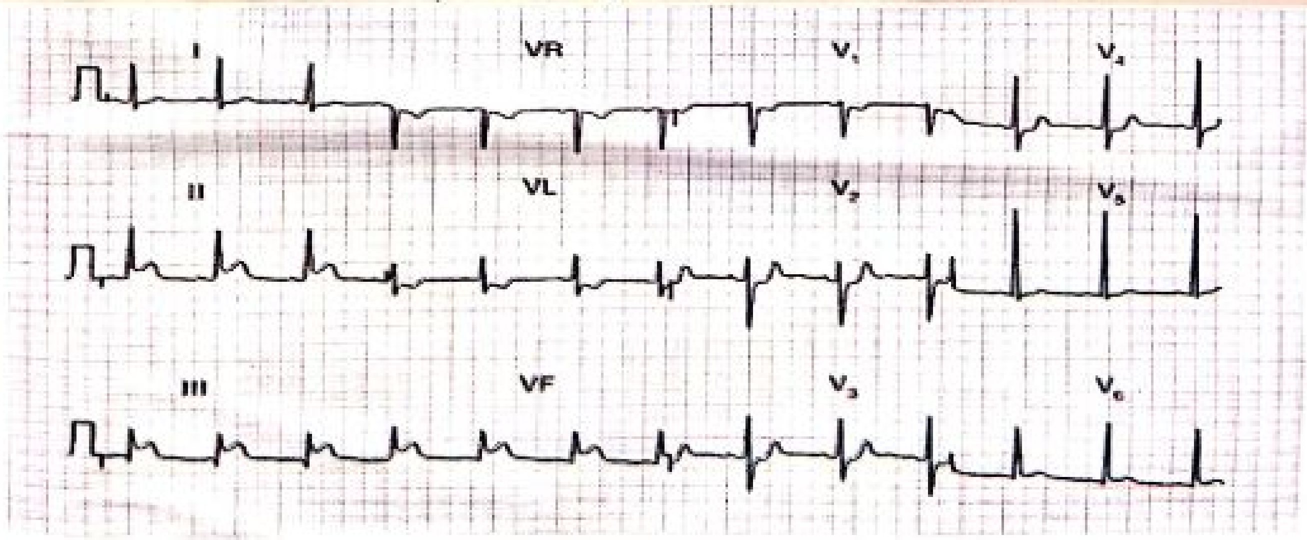
	❖ **No role of fibrinolytics/thrombolytics** **For Stable angina** ❖ Aspirin on arrival and nitrates to abort attack ❖ Afterwards---Beta blocker or CCB –first line agent **Choice of thrombolytic:** ❖ Alteplase (tPA) more superior than streptokinase ❖ Because of the possible development of antibodies, SK should not be administered to a patient who has received it in the past (>5 days and less than a year)
Contraindications to Thrombolytics	**Absolute Contraindications** ○ Previous hemorrhagic stroke at any time or ischemic stroke within 3 months ○ Known intracranial neoplasm, structural cerebral vascular lesion, or closed head injury within 3 months ○ Active bleeding or bleeding diathesis (excluding menses) ○ Suspected aortic dissection ○ Intracranial or intraspinal surgery within 2 months ○ Severe uncontrolled hypertension, unresponsive to medical therapy ○ For SK, prior exposure within 6 months **Relative Contraindications** ○ Severe, uncontrolled hypertension at presentation (blood pressure > 180/110 mm Hg), or history of chronic History of ischemic stroke > 3 months, dementia, or known intracerebral pathologic condition not covered in contraindications ○ Oral anticoagulant therapy ○ Traumatic or prolonged (>10 min) CPR or major surgery (<3 wk.) ○ Non-compressible vascular punctures ○ Recent internal bleeding (2–4 wk.) ○ Pregnancy ○ Active peptic ulcer

Inferior wall Myocardial Infarction



Interpretation	The ECG shows: ❖ Sinus rhythm ❖ Normal axis ❖ Small Q waves in lead III but not elsewhere ❖ Elevated ST segments in leads II, III, VF, with upright T waves ❖ T wave inversion in lead VL ❖ Suggestion of ST segment depression in leads V2-V3
Diagnosis	❖ Inferior Wall Myocardial Infarction

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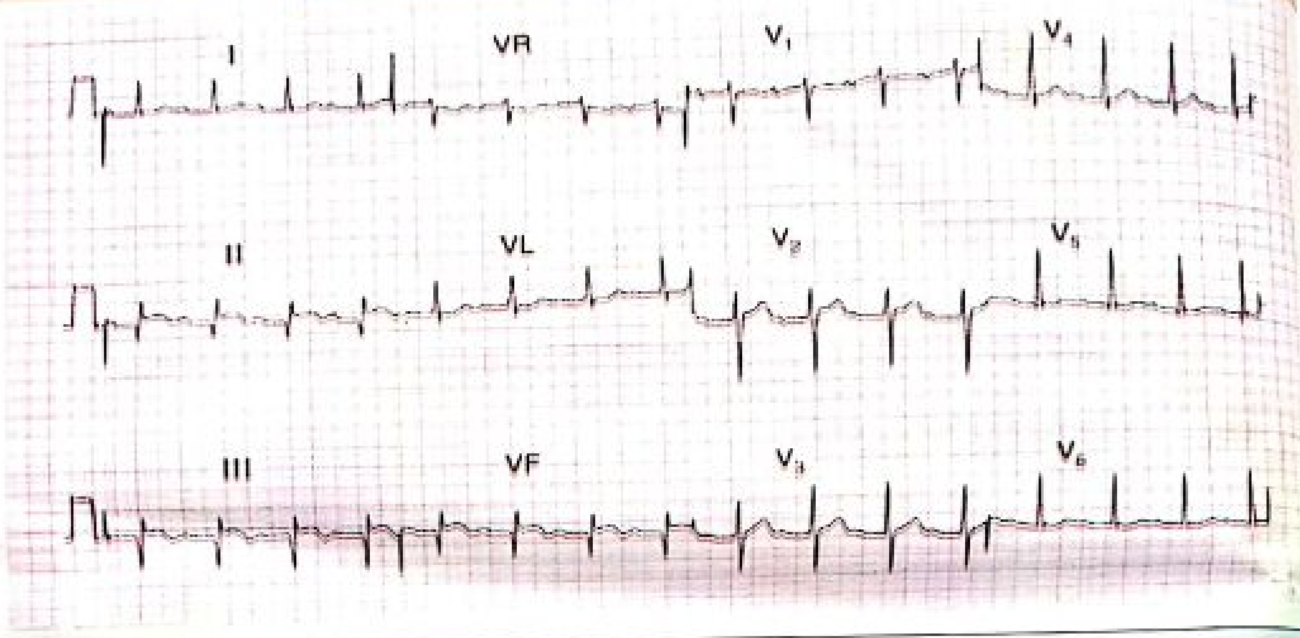
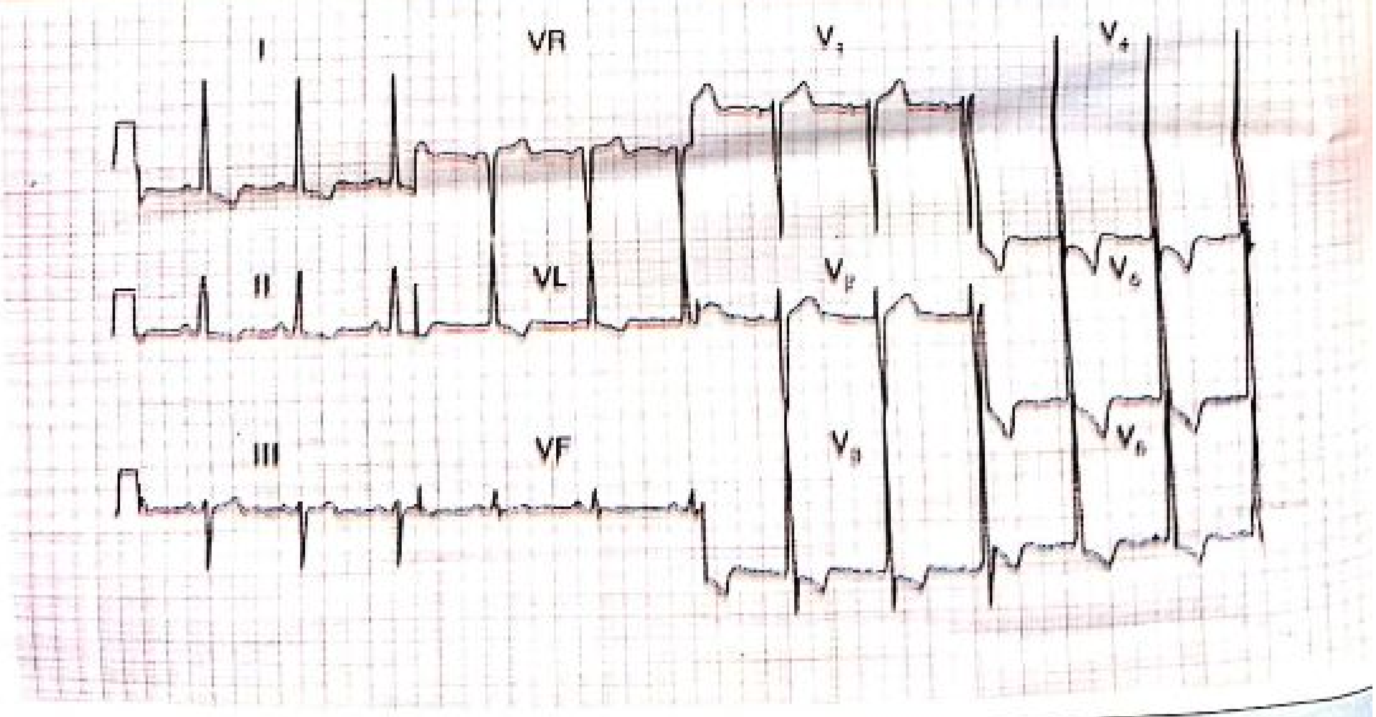
Inferior wall Myocardial Infarction + 1st Degree Heart block



Interpretation	The ECG shows: ❖ PR interval 320 ms - first degree block ❖ Q waves in leads II, III, aVF ❖ Raised ST segments in leads II, III, aVF
Diagnosis	❖ Inferior Wall Myocardial Infarction with First degree AV block

Left Ventricular Hypertrophy



Interpretation	The ECG shows: ❖ Sinus rhythm, Heart rate 75/min ❖ Tall R waves and deep S waves in the chest leads ❖ S wave in V1 + R wave in V6 = >65mm (criteria S wave in V1 + R wave in V6 >3
Diagnosis	❖ Left ventricular hypertrophy

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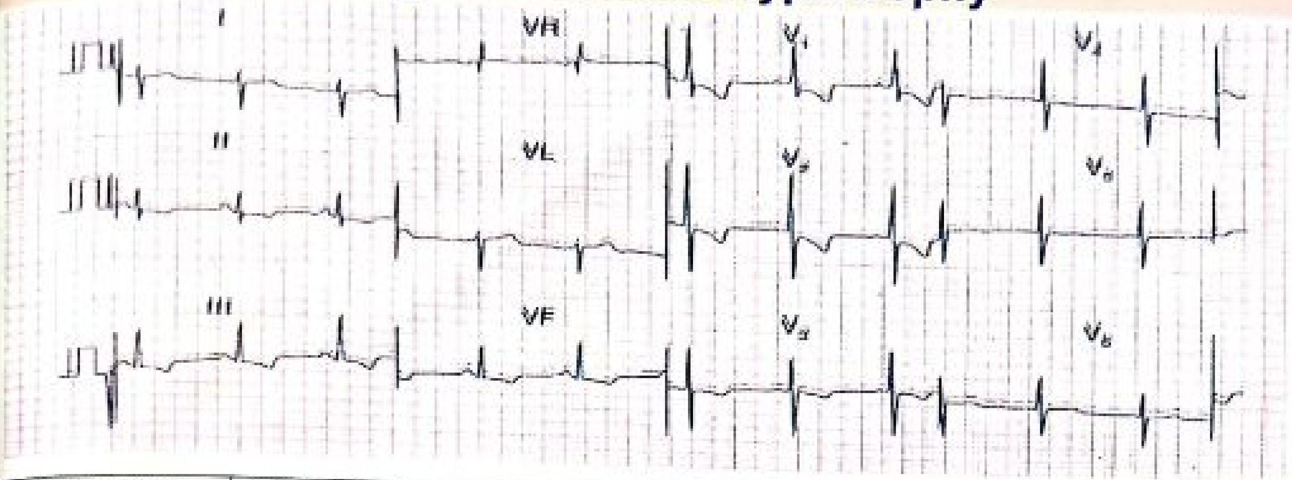
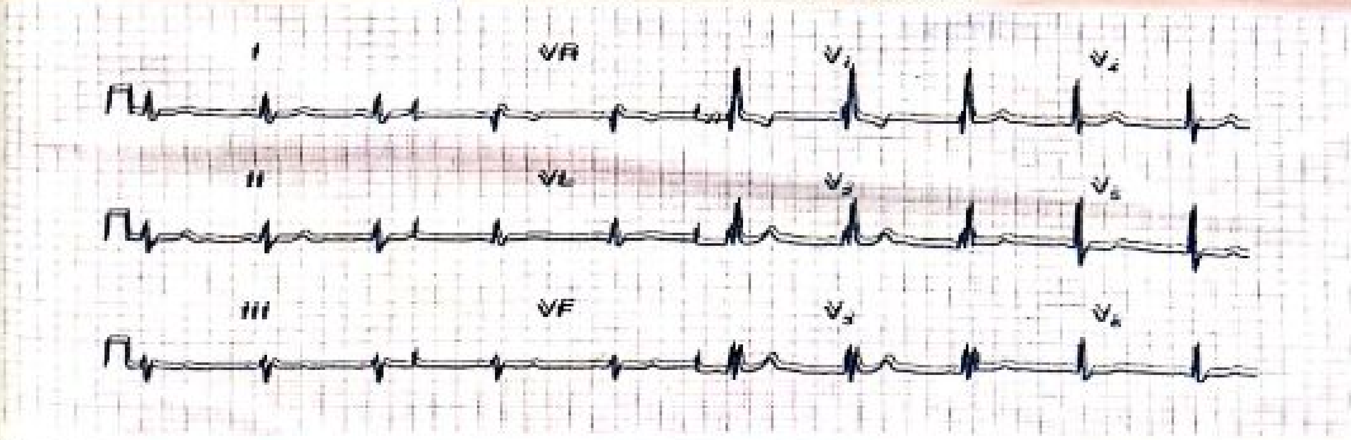
Right Ventricular Hypertrophy



Interpretation	The ECG shows: ❖ Dominant R waves in lead V1 = 12mm (Criteria R wave in V1 > 7mm) ❖ Sinus rhythm ❖ Peaked P waves, best seen in lead II ❖ Right axis deviation ❖ Dominant R waves in lead V1 ❖ Deep S waves in lead V6 ❖ Inverted T waves in leads II, III, VF, V1-V3
Diagnosis	❖ Right ventricular hypertrophy
Causes	❖ Congenital heart diseases ❖ Pulmonary hypertension ❖ Lung diseases

Right Bundle Branch Block



Interpretation	The ECG shows: ❖ Broad QRS complexes (140 ms) ❖ RSR' pattern in lead V1, V2, V3 ❖ Wide and slurred S waves in lead V5 ❖ Normal ST segments and T waves ❖ Mnemonic: MaRRoW------M pattern in lead V1, W pattern in lead V5-V6, RR for Right bundle branch block
Diagnosis	❖ Right Bundle Branch Block
Causes	❖ Normal variant ---may develop due to inc heart rate ❖ Atrial septal defect ❖ Cardiomyopathy ❖ IHD

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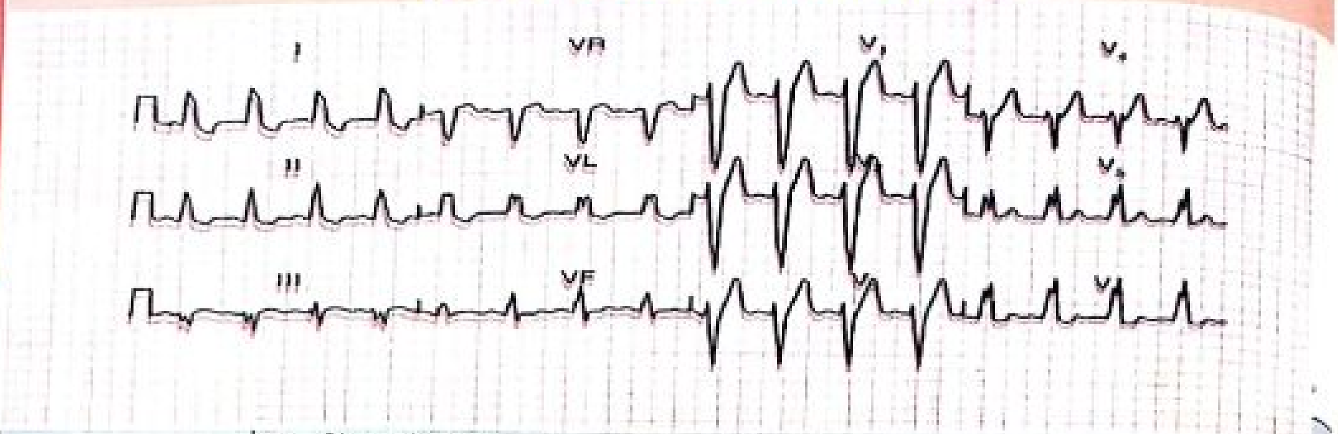
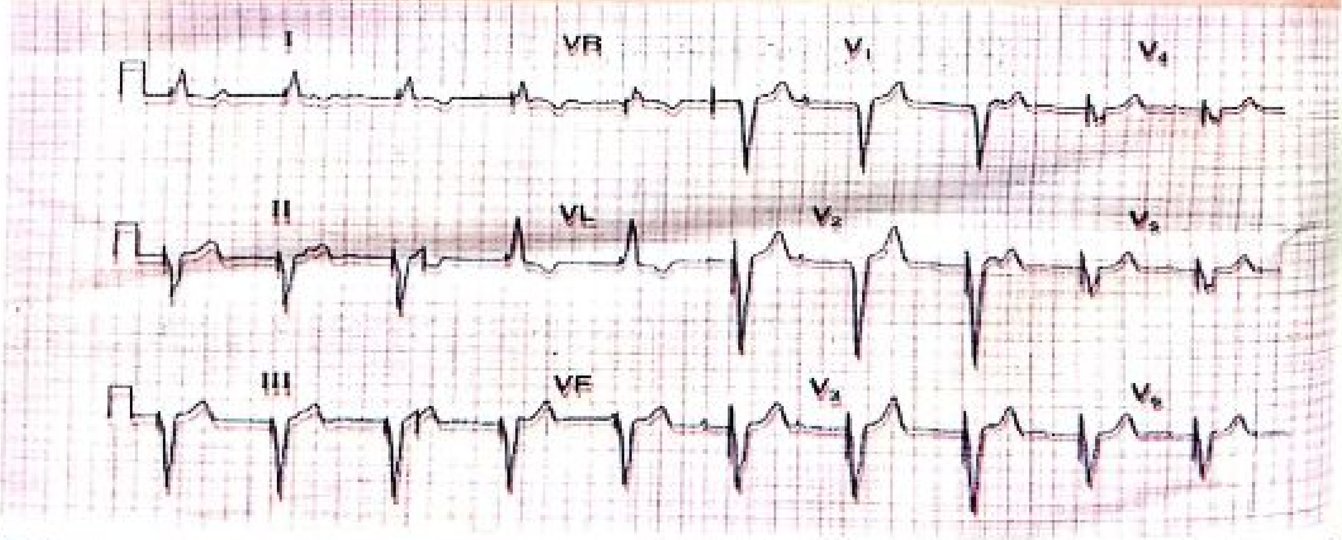
ECG

Left Bundle Branch Block



	❖ Sinus rhythm ❖ Broad QRS complexes (140 ms) ❖ 'M' pattern in lead V6 ❖ Inverted T waves in leads I, VL, V6 ❖ Mnemonic: WiLLiaM------W pattern in lead V1, M pattern in lead V6, LL for Left bundle branch block
Diagnosis	❖ Left Bundle Branch Block
Causes	❖ IHD ❖ Hypertension ❖ Cardiomyopathy ❖ Idiopathic fibrosis

Pacemaker



Interpretation	The ECG shows: ❖ QRS complexes preceded by a sharp 'spike' ❖ Broad QRS complexes (160 ms) ❖ Deep S wave in lead V6 (this is how you differentiate between LBBB and paced rhythm)
Diagnosis	❖ Paced rhythm (Ventricular pacemaker)
Two absolute indications	❖ Sick sinus syndrome ❖ Stokes-Adams syndrome

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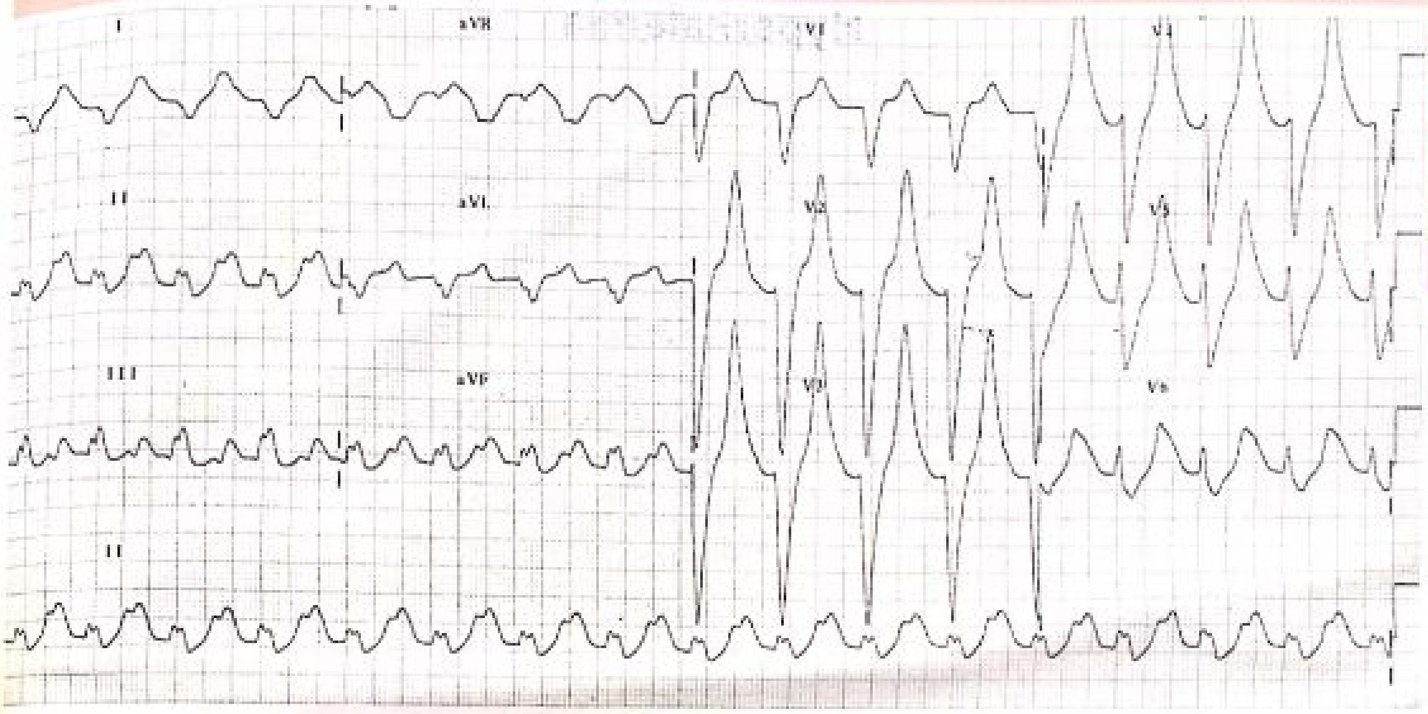
Hyperkalemia



Interpretation	The ECG shows: ❖ Prolonged PR interval. ❖ Broad, bizarre QRS complexes — these merges with both the preceding P wave and subsequent T wave. ❖ Peaked T waves.(Tall tented T waves)
Diagnosis	❖ Hyperkalaemia
ECG in Hyperkalaemia	❖ Serum potassium > 5.5 mEq/L is associated with repolarization abnormalities: o Peaked T waves (usually the earliest sign of hyperkalaemia) ❖ Serum potassium > 6.5 mEq/L is associated with progressive paralysis of the atria: o P wave widens and flattens o PR segment lengthens o P waves eventually disappear ❖ Serum potassium > 7.0 mEq/L is associated with conduction abnormalities and bradycardia: o Prolonged QRS interval with bizarre QRS morphology o High-grade AV block with slow junctional and ventricular escape rhythms o Any kind of conduction block (bundle branch blocks, fascicular blocks) o Sinus bradycardia or slow AF o Development of a sine wave appearance (a pre-terminal rhythm)
Treatment	❖ Withdrawal of potassium, Potassium containing foods and offending drugs ❖ **10mL of 10% calcium gluconate** o IV via a big vein over 2min, repeated as necessary until ECG improves. o This is cardioprotective but does not affect K+ level. ❖ **Intravenous insulin + glucose:** o Insulin stimulates intracellular uptake of K+, lowering serum K+ by 1–2mmol/L over ~60min. ❖ **Salbutamol nebulizers** o Work in the same way as insulin/glucose but high doses are required (10–20mg) and tachycardia can limit use. ❖ **If venous bicarbonate low (i.e. patient is acidotic) giving IV sodium bicarbonate** o E.g. 50mL of 8.4% NaHCO3 as an infusion or bolus into a big vein) can help to drive K+ into cells, though the effect is unpredictable.

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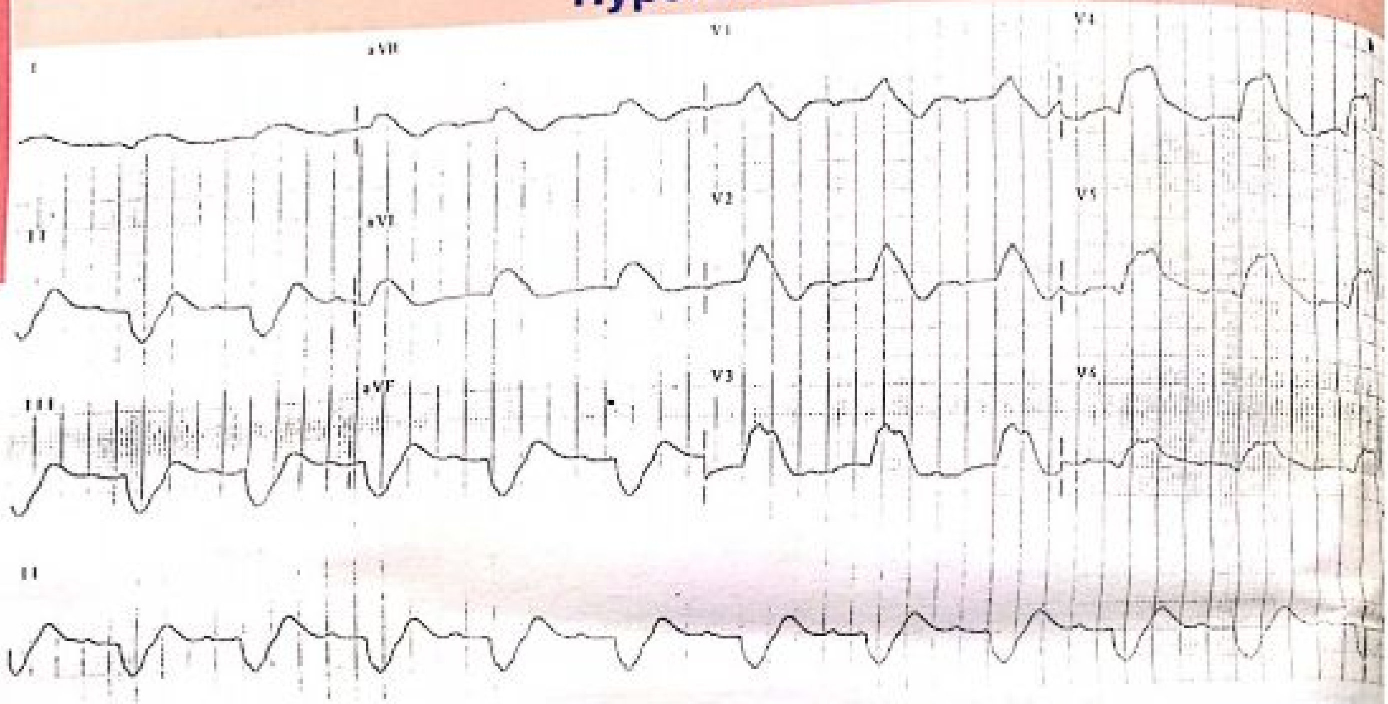
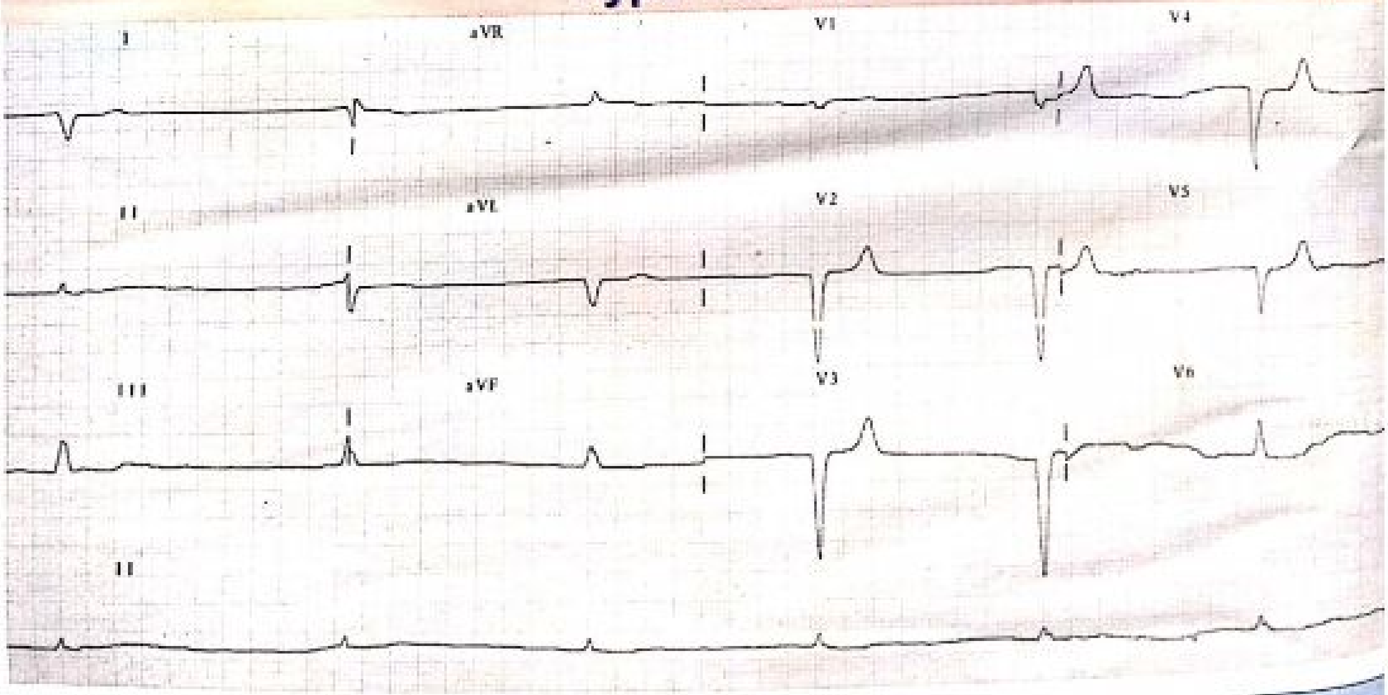
Hyperkalemia



Interpretation	The ECG shows: ❖ Prolonged PR interval. ❖ Broad, bizarre QRS complexes ❖ Sine wave pattern
Diagnosis	❖ Hyperkalaemia

Hyperkalemia



Interpretation	The ECG shows: ❖ Slow junctional rhythm. ❖ Intraventricular conduction delay. ❖ Peaked T waves.
Diagnosis	❖ Hyperkalaemia

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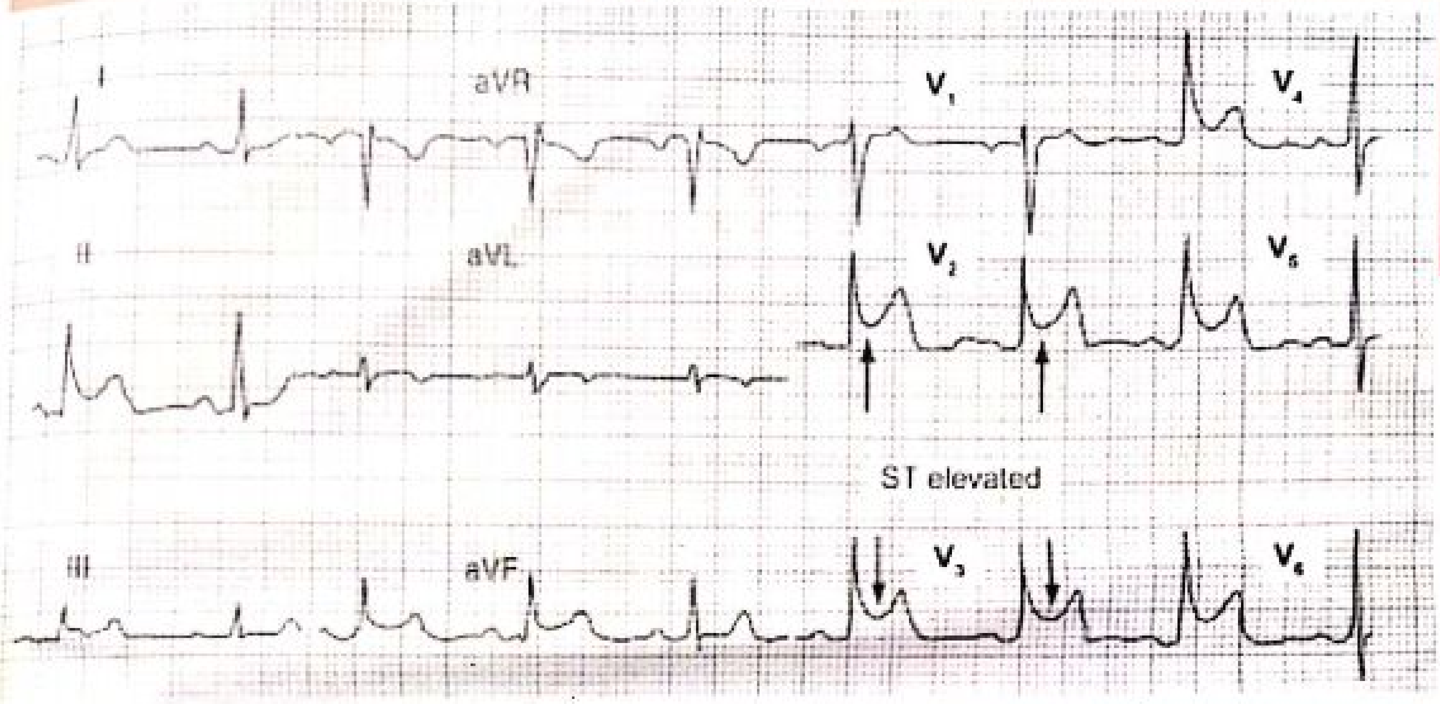
Pericarditis



Interpretation	The ECG shows: ❖ ST elevation with upward concavity in Lead II, aVF, V2-V6
Diagnosis	❖ Acute Pericarditis
Clinical features	❖ Sharp pain, aggravated by inspiration, and relieved by sitting up and leaning forward.
Causes	❖ Viral—most common (Coxsackievirus), Autoimmune (e.g. SLE, rheumatoid arthritis), acute STEMI or Dressler syndrome
ECG characteristics	❖ Widespread concave (saddle shaped) ST elevation ❖ PR depression= most specific ECG marker for pericarditis
Treatment	❖ To relieve pain----NSAIDS ❖ Colchicine ❖ Glucocorticoids should be used for initial treatment of acute pericarditis only in patients with contraindications to NSAIDs, or for specific indications (ie, systemic inflammatory diseases, pregnancy, renal failure), and should be used at the lowest effective dose---Ref: UpToDate ❖ If recurrence or no response to medical treatment---pericardiotomy ❖ Treatment of primary cause

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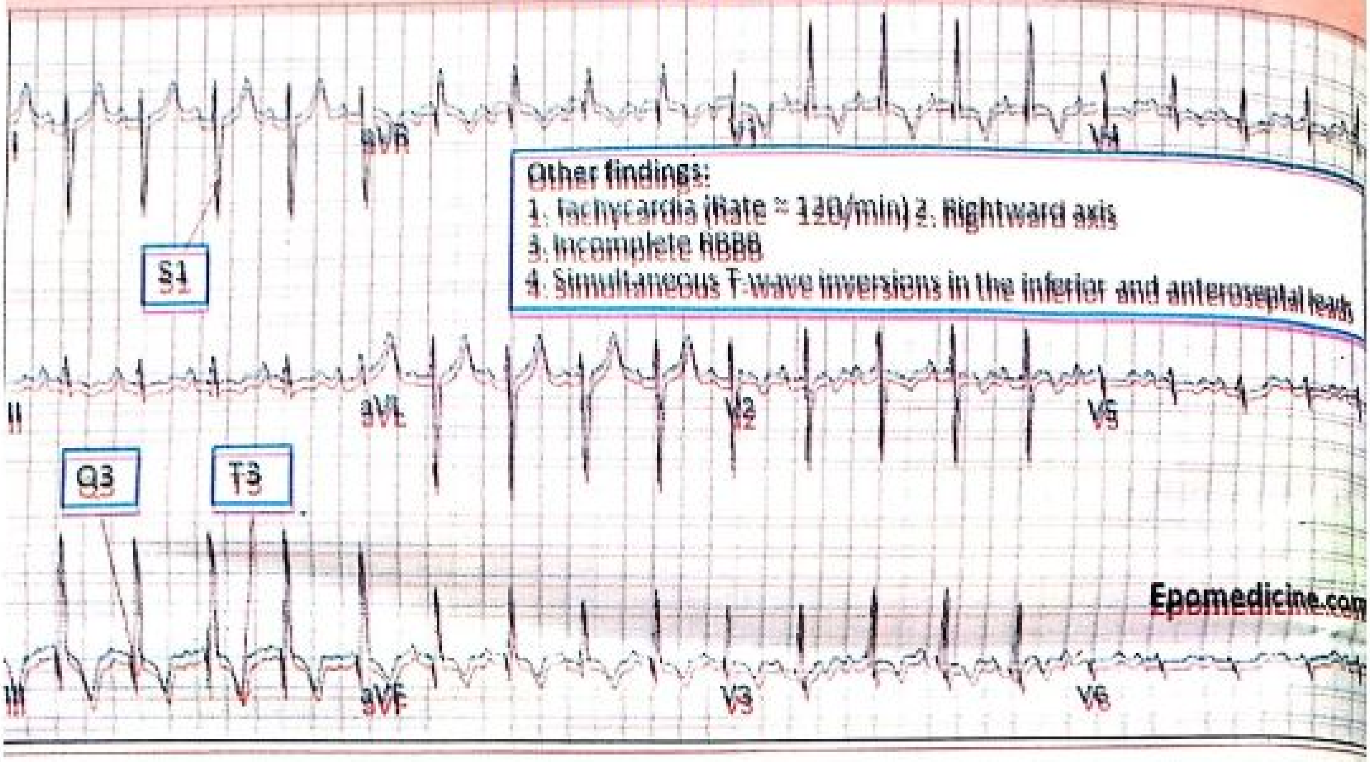
Pulmonary Embolism



Interpretation	The ECG shows: ❖ Sinus tachycardia ❖ Incomplete RBBB pattern ❖ S1 Q3 T3 pattern ❖ T wave inversion in lead v1-v4
Diagnosis	❖ Acute Pulmonary embolism
Investigations	❖ Use Wells' criteria for PE to guide investigations ❖ D-dimer (considered positive >500ng/mL)- If positive do either CT-PA or V/Q scan ❖ CT-PA o **First line and gold standard investigation** o Requires administration of intravenous radiocontrast dye but is otherwise non-invasive o Avoid in patients with renal impairment, and dye allerg ❖ V/Q scan: o V/Q scanning requires administration of radioactive material Xenon gas (via both inhaled and IV routes o Useful in patients with renal impairment and dye allergy o It is most useful in patients without significant cardiopulmonary disease and a normal chest X-ray ❖ U/S (Doppler) o Colour Doppler ultrasound of the leg veins remains the investigation of choice in patients with suspected DVT, but may also be applied to patients in whom PE is suspected (Approximately 50-70% of patients who have symptomatic pulmonary emboli will have lower extremity DVT when evaluated)
Treatment	❖ Overlapping therapy of LMWH and warfarin ❖ Thrombolysis: o First-line treatment for massive PE where there is circulatory failure (e.g. hypotension, acidosis). o Streptokinase -----250,000 U as a loading dose over 30 minutes, followed by 100,000 U/hr over 12-24 hours.
Duration of therapy:	❖ First episode of VTE due to reversible risk factors (e.g. surgery, major trauma) = 3 months ❖ If VTE is unprovoked i.e. idiopathic or risk factors are weak = 6 months ❖ Persistent prothrombotic risk or a history of previous emboli (second episode) = lifelong

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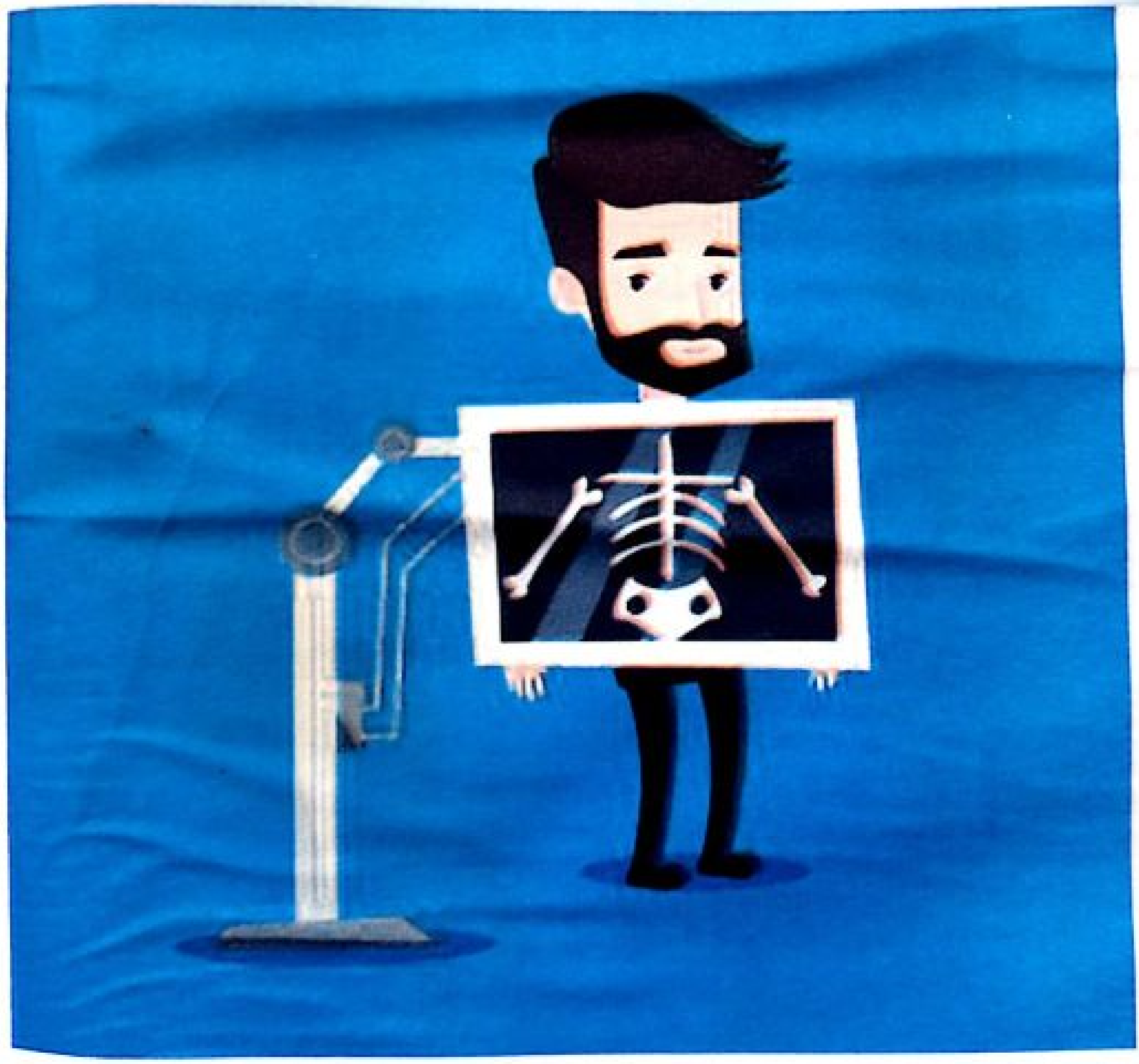
Station X-Rays



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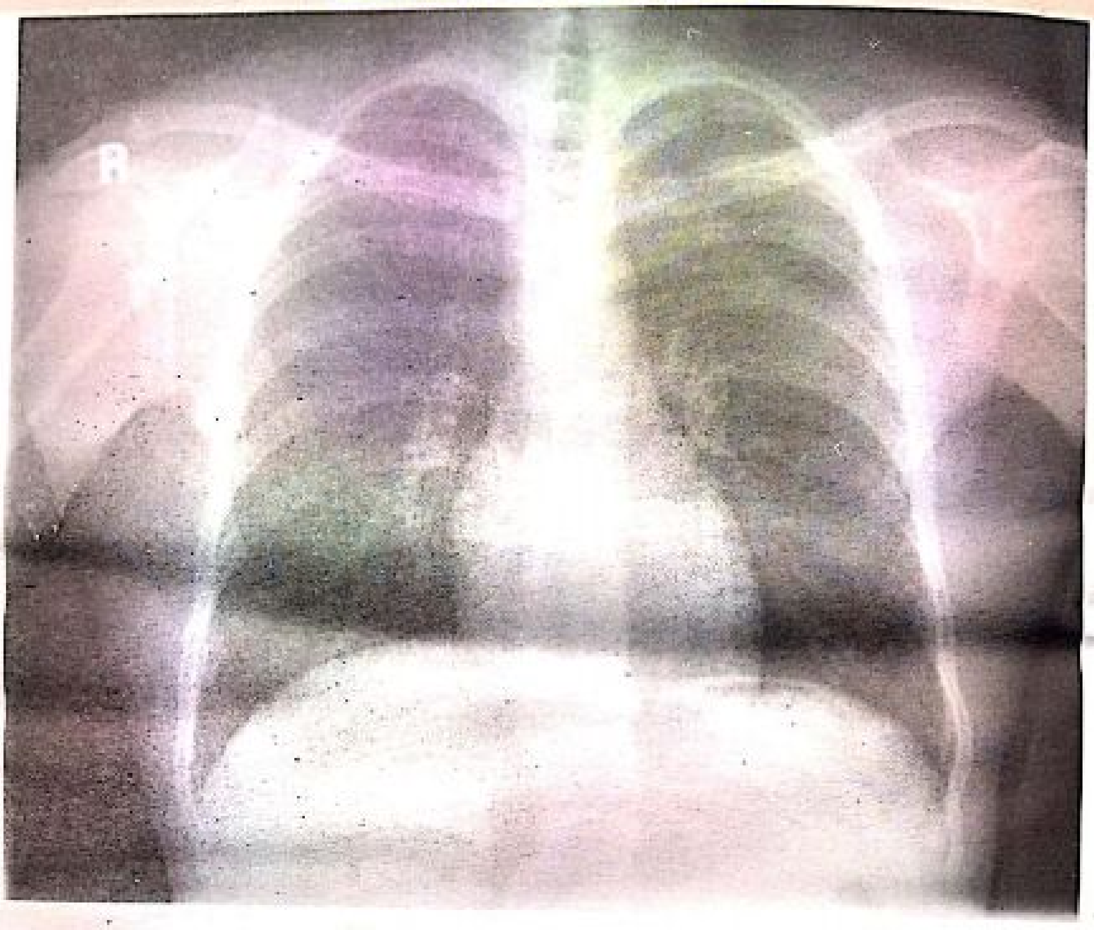
Normal Chest X-Ray



- **How to Report/ Represent Chest X-Ray**
  - Name of the X-ray (e.g. chest abdomen etc.)
  - View (e.g. AP, PA, Lateral view)
  - Check for rotation (ensure each clavicle is at the same distance to vertebrae)
  - A----Airway
    - Ensure trachea is visible and in midline
    - Check for tubes, pacemaker, lines, forign body etc.
    - Check for widened mediastinum
  - B-----Bones
    - Check for fracture
    - Also check soft tissue for subcutaneous air, foreign bodies and surgical clips
  - C----Cardiac
    - Check heart size and border
    - Check heart valves for calcification and valve replacements
  - D----Diaphragm
  - E----Effusion
  - F----Fields—lung

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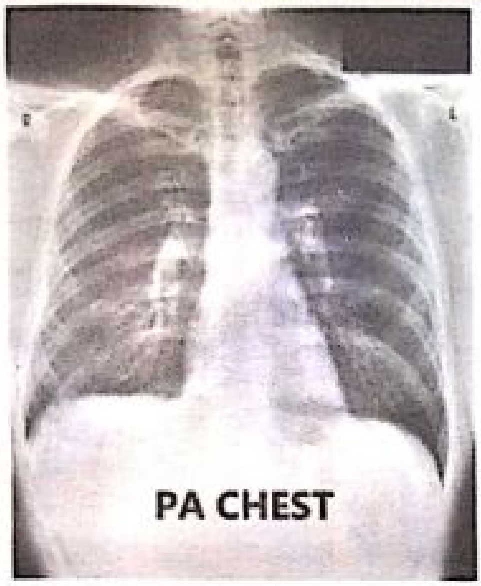
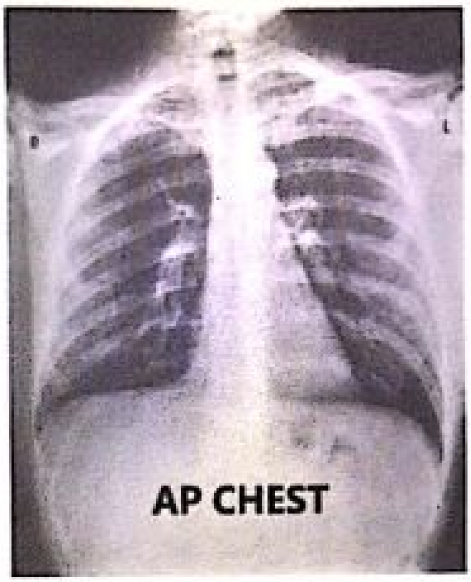
X-Ray PA view vs AP view





PA VIEW	AP VIEW
❖ X-rays passes from posterior of body to anterior, it is called PA view	❖ X-rays passes from anterior of body to posterior, it is called AP view
❖ Clavicle are more horizontal (i.e. that is do not project into apices or thrown out of apices)	❖ Clavicles seen above the lung fields
❖ Heart won't be magnified	❖ Heart is magnified so cannot comment of cardiomegaly
❖ Scapula are away from the lung fields	❖ Inner border seen over the lung
❖ Ribs are obliquely oriented	❖ Ribs are more horizontal
❖ Spine and post end of ribs are clearly seen	❖ Anterior ribs better visible

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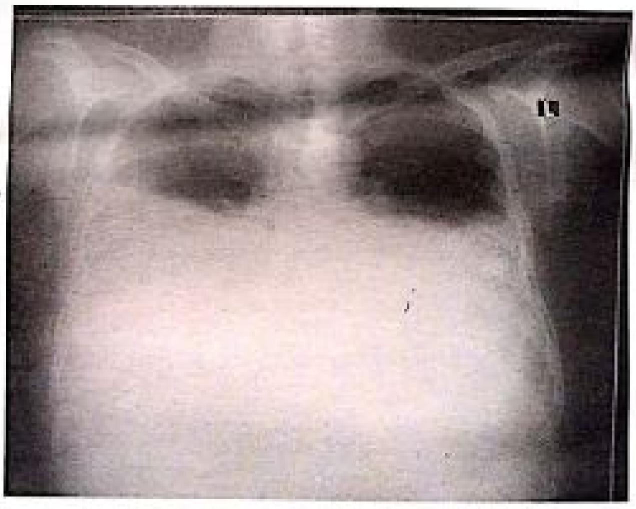
Pleural Effusion

Interpretation	❖ X-ray chest of patient PA view, taken on date XYZ, *no bony patholog*y *seen, no* subcutaneous air, no visible line, tube or any bony pathology seen ❖ Homogenous opacity with concave upper margin on left side with shift of trachea to right side ❖ Obliteration of Costophrenic and Cardiophrenic angles on Left side ❖ Silhouette sign is positive
Diagnosis	❖ Left sided pleural effusion
Differential diagnosis	❖ All the causes of exudative effusion as given below

Bilateral Pleural Effusion



Interpretation	❖ X-ray chest of patient AP view, taken on date XYZ, no bony pathology seen, no subcutaneous air, no visible line, tube or any bony pathology seen ❖ Bilateral Homogenous opacity with concave upper margin ❖ Obliteration of Costophrenic and Cardiophrenic angles on both sides
Diagnosis	❖ Bilateral pleural effusion

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TOACs Related Question on Pleural Effusion

Transudative Effusion	Exudative Effusion
❖ Alteration of systemic factors that affect the formation and absorption of pleural fluid (e.g. Increased capillary hydrostatic pressure, decreased plasma oncotic pressure)	❖ Increased permeability of pleural capillaries or lymphatic dysfunction
❖ Usually bilateral	❖ Can be bilateral or unilateral
❖ Causes ○ Mnemonic: some persistent people can cause Nausea ▪ SVC syndrome ▪ Peritoneal dialysis ▪ Pulmonary embolism ▪ CHF (>90% cases—most common) ▪ Cirrhosis ▪ Nephrotic syndrome	❖ Causes: ○ Mnemonic: PICTURE MAP ▪ Parapneumonic effusion (associated with bacterial pneumonia, lung abscess) ▪ Infections (viral, bacterial, fungal) ▪ Cancer ▪ Trauma/tumour (chylothorax) ▪ Uremia ▪ Rickettsial infection ▪ Esophageal perforation ▪ Meigs syndrome (ascites +hydrothorax associated with ovarian tumor) ▪ Asbestos ▪ Pancreatic disease (elevated pleural fluid amylase)

○ **Distinguish clinically using Light's Criteria**

Lights Criteria		
	Exudate	**Transudate**
Pleural fluid protein : serum protein	>0.5	<0.5
Pleural fluid LDH: to serum LDH	>0.6	<0.6
Pleural LDH	>2/3 upper limit of N serum LDH	<2/3 upper limit of N serum LDH

Note:
- All criteria for transudate must be fulfilled to be considered a transudative effusion.
- If any one of the criteria for exudates is met – it is an exudate

❖ **Clinical Features:**
- Often asymptomatic
- Dyspnea: varies with size of effusion and underlying lung function
- Pleuritic chest pain
- Inspection: trachea deviates away from effusion, ipsilateral decreased expansion
- Percussion: decreased tactile fremitus, dullness
- Auscultation: decreased breath sounds, bronchial breathing and egophony at upper level, pleural friction rub

❖ **Management:**
- Treat the underlying cause
- If the effusion is symptomatic do therapeutic thoracentesis and use the following step wise approach
  - Effusion resolved-----Observation
  - Effusion re-accumulates---Pleurodesis with talc or bleomycin or tetracycline
    - Pleurodesis successful--- observation
    - Pleurodesis unsuccessful----Consider pleurectomy, pleural abrasion or shunt

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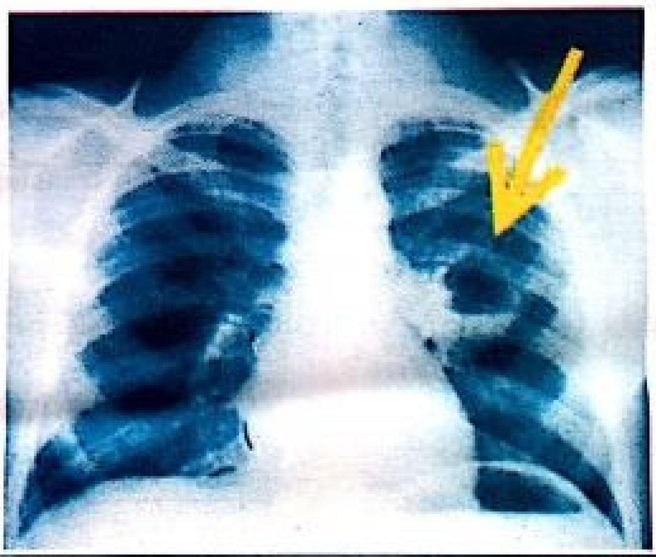
Simple/Uncomplicated Parapneumonic Effusion	Complicated Parapneumonic Effusion and Empyema
❖ pH >7.2 ❖ LDH <1/2 serum ❖ Glucose >60mg/dL	❖ ANY one of the following ○ Large (encompassing more than one-half of the hemi-thorax), free flowing ○ Effusion of any size with loculations ○ Thickened parietal pleura on chest CT ○ Positive-gram stain or culture ○ pH < 7.20 or glucose < 60 mg/dL
❖ Treat with antibiotics ❖ Drainage if necessary, usually they do not required drainage	❖ **Tube thoracostomy is indicated when pleural fluid glucose is less than 60 mg/dL (less than 3.3 mmol/L) or the pH is less than 7.2** ❖ Antibiotic therapy should be continued for at least 2-4 weeks

Clinical Pearls:

- Empyema--Gross pus in the pleural space or positive gram stain. Positive culture is NOT required for diagnosis
- TB---- Protein > 4.0 g/dL and may exceed 5.0 g/dL

Lung Abscess



Interpretation	❖ X-ray chest of patient PA view, taken on date XYZ, no subcutaneous air, no visible line, tube or any bony pathology seen ❖ Costophrenic and Cardiophrenic angles are clear on both sides ❖ A cavity with air-fluid level seen on left side
Diagnosis	❖ **Lung Abscess**
Differential diagnosis/ Causes	❖ Aspiration of infected material ❖ Staph aureus infection ❖ Fungal infection ❖ TB with emphysema

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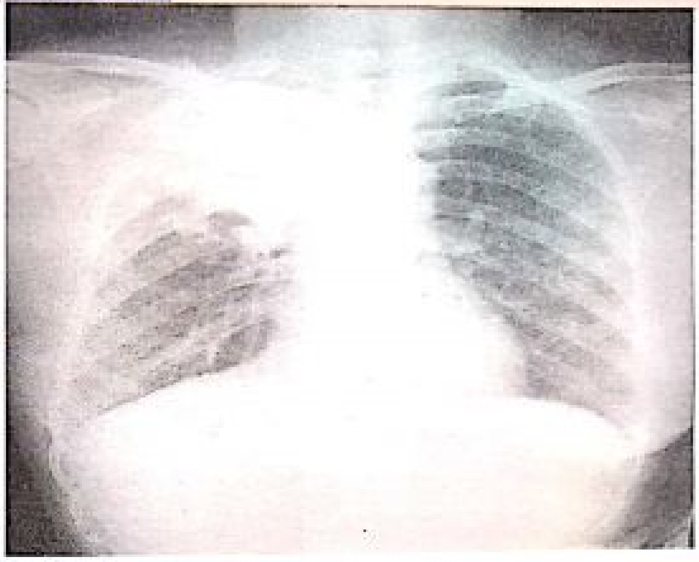
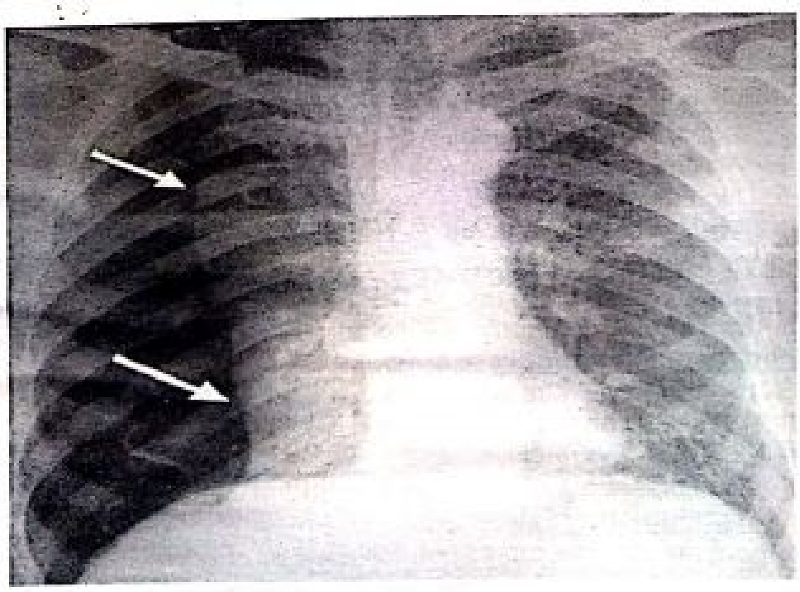
Consolidation



Interpretation	Explaining the Left side X ray ❖ X-ray chest of patient PA view, taken on date XYZ, no bony pathology seen, no subcutaneous air, no visible line, tube or any bony pathology seen ❖ Cardiophrenic and costophrenic angle is clear on left side ❖ Homogenous opacity in right lower zone ❖ Obscuring the right heart border
Diagnosis	❖ **Right sided consolidation (Pneumonia)**
Differential diagnosis	❖ Consolidation ❖ Neoplasm ❖ Loculated pleural effusion ❖ Abscess before burst

Pneumothorax

Interpretation	❖ X-ray chest of patient PA view, taken on date XYZ, no bony pathology seen, no subcutaneous air, no visible line, tube or any bony pathology seen ❖ Cardiophrenic and costophrenic angle is clear on both side ❖ Increased translucency on right side with arrow indicating collapsed lung margin
Diagnosis	❖ **Right sided pneumothorax**



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Tension Pneumothorax

Interpretation	❖ X-ray chest of patient AP view, taken on date XYZ, *no bony pathology seen*, no subcutaneous air, no visible line, tube or any bony pathology seen ❖ Cardiophrenic and costophrenic angle obliterated on left side ❖ Heart and trachea shifted towards left side ❖ Increased translucency on right side with trachea and heart shifter towards opposite side
Diagnosis	❖ **Right sided tension pneumothorax**

Toacs Related Question on Pneumothorax

Pneumothorax	❖ Accumulation of air in pleural space ❖ Unilateral chest pain and dyspnea, unilateral chest expansion ❖ ↓ tactile fremitus (only increased in consolidation e.g. pneumonia), hyper resonance ❖ Diminished breath sounds, all on the affected side.
Types	**Primary Spontaneous** ❖ Due to rupture of apical blebs or cysts. Occurs most frequently in tall, thin, young males. **Secondary Spontaneous** ❖ Due to diseased lung (e.g., bullae in emphysema, infections), mechanical ventilation with use of high pressures → barotrauma. **Traumatic Pneumothorax** ❖ Caused by blunt (e.g. rib fracture) or penetrating (e.g., gunshot) trauma **Tension Pneumothorax** ❖ Can be any of the above. ❖ Air enters pleural space but cannot exit. ❖ Increasing trapped air → tension pneumothorax. ❖ Trachea deviates away from affected lung
Treatment	**Primary pneumothorax** ❖ If <2cm and asymptomatic ----Discharge & follow up x-ray after 2 weeks ❖ If <2cm and symptomatic ----Aspiration—if fails then chest tube **Secondary pneumothorax** ❖ All patients should be admitted for at least 24 hours ❖ If <1cm -----High flow oxygen, observe for 24 hours ❖ If 1-2cm -----Aspiration ❖ If >2cm/ >50 years of age/ symptomatic ------chest tube **Tension pneumothorax** ❖ Urgent needle decompression followed by chest tube placement

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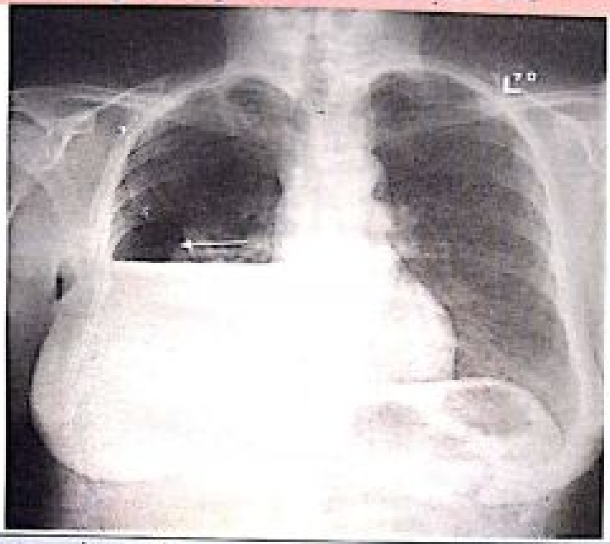
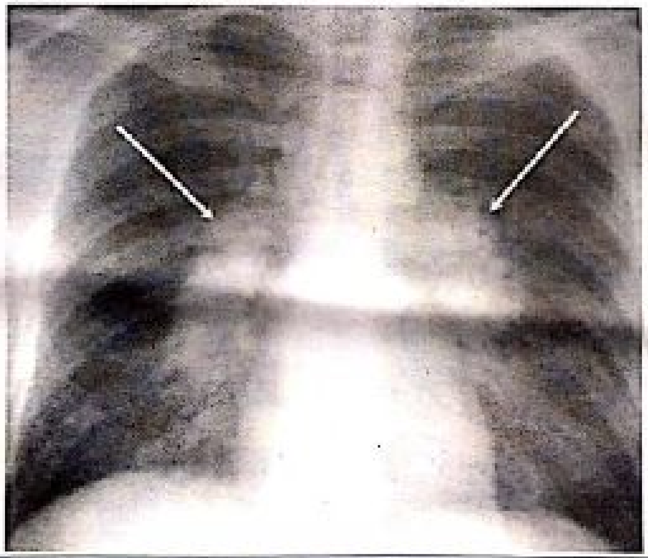
Hydropneumothorax



Interpretation	❖ Increased translucency on right side with collapsed lung margin ❖ Horizontal fluid level with obliteration of Cardiophrenic and costophrenic angle on right side
Diagnosis	❖ **Right sided Hydropneumothorax**
Causes	❖ Iatrogenic, trauma, rupture of lung abscess, pulmonary TB
Treatment	❖ Insertion of intrathoracic tube ❖ Treatment of specific cause

Bilateral Hilar Lymphadenopathy



Interpretation	❖ X-ray chest of patient AP view, taken on date XYZ, no bony pathology seen, no subcutaneous air, no visible line, tube or any bony pathology seen ❖ Cardiophrenic and costophrenic angle clear ❖ There is bilateral Hilar lymphadenopathy
Differential Diagnosis	❖ Sarcoidosis ❖ TB ❖ Lymphoma ❖ Fungal infection ❖ Drug induced e.g. phenytoin leading to psuedolymphoma
What else you would like to examine in this patient	❖ Other lymph nodes ❖ Spleen and liver ❖ Signs of TB, sarcoidosis ❖ Bony tenderness (leukemia)

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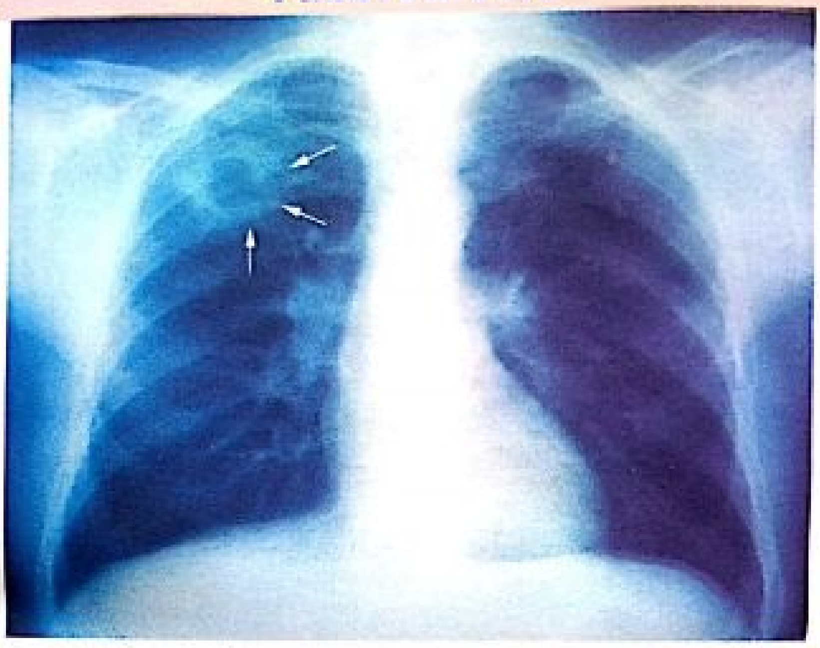
Tuberculosis



Interpretation	❖ X-ray chest of patient AP view, taken on date XYZ, no bony pathology seen, n subcutaneous air, no visible line, tube or any bony pathology seen ❖ Cardiophrenic and costophrenic angle clear ❖ There is Patchy opacity with cavity in right upper zone
Diagnosis	❖ Pulmonary Tuberculosis
What is significance of this finding	❖ Presence of cavity indicates active and open case of tuberculosis

Interpretation	❖ X-ray chest of patient AP view, taken on date XYZ, no bony pathology seen, no subcutaneous air, no visible line, tube or any bony pathology seen ❖ Cardiophrenic and costophrenic angle clear ❖ There is Patchy opacity involving both upper and middle zone in both right and left lung
Diagnosis	❖ Bilateral extensive tuberculosis

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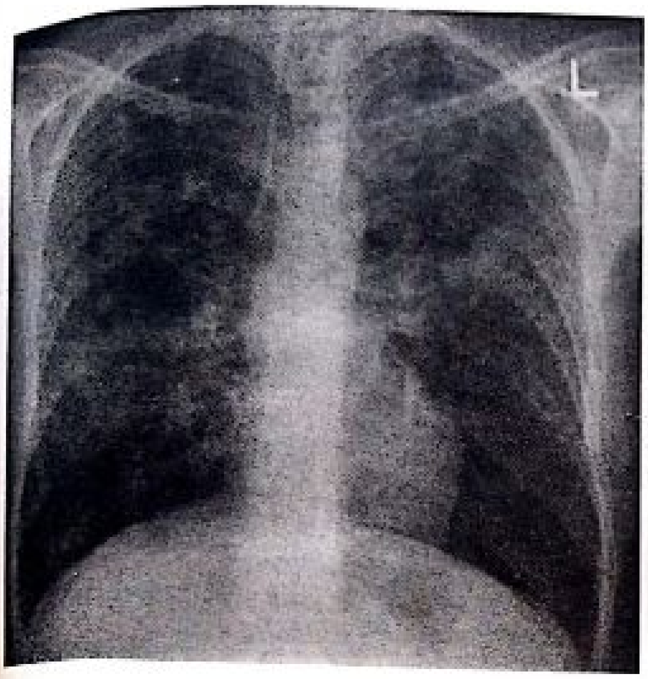

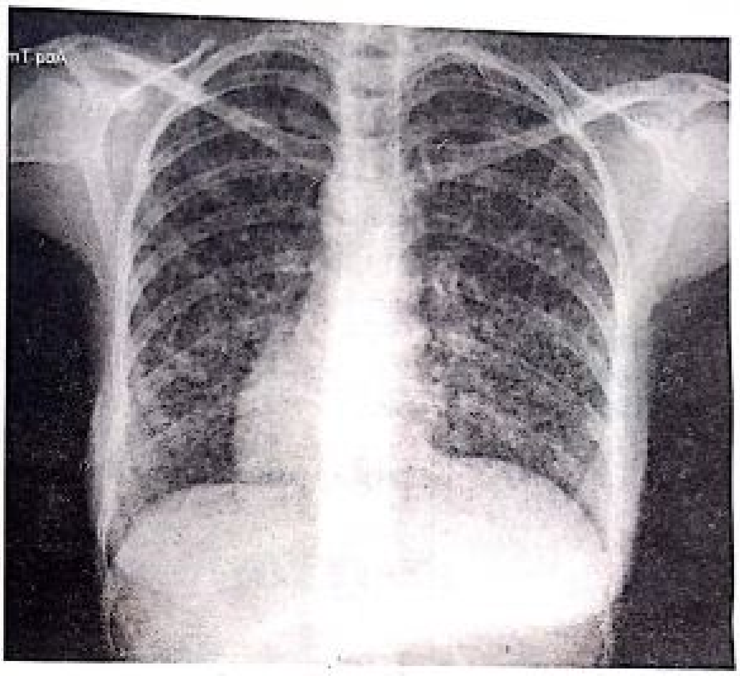

Interpretation	❖ X-ray chest of patient AP view, taken on date XYZ, no bony pathology seen, no subcutaneous air, no visible line, tube or any bony pathology seen ❖ Cardiophrenic and costophrenic angle clear ❖ Multiple miliary mottling involving all zones of both lung fields
Diagnosis	❖ Milliary tuberculosis
Differential Diagnosis	❖ Sarcoidosis ❖ Pulmonary eosinophilia ❖ Pneumoconiosis's

Toacs Related Question on Tuberculosis

Treatment

- ❖ **Initial therapy ---(2 months---4 drugs)**
  - o Mnemonic RIPE: (Rifampicin, Isoniazid, Pyrazinamide, Ethambutol)
- ❖ **Continuation phase – (4 months—2 drugs)**
  - o That are Isoniazid & Rifampicin
- ❖ **Extended treatment: (For 9-12 months)—considered in the following**
  - o HIV- positive patients, Tuberculous osteomyelitis, Miliary TB, Meningitis (Minimum 12 months), Pregnancy
- ❖ **INH caused neuropathy**
  - o Pyridoxine (vitamin B6) 25 to 50 mg PO daily should be used as prophylaxis with INH to prevent neuropathy
  - o While 50–100 mg orally daily as treatment if neuropathy develops.
- ❖ **Baby can be breastfed while taking ATT**
- ❖ **Drug side effects**

Drug	Complications
Isoniazid	Peripheral neuropathy, Hepatitis
Rifampicin	Orange-red colour body secretions (urine, tears), hepatitis,
Ethambutol	Optic neuritis (colour blindness for green, decreased visual acuity)
Pyrazinamide	Hyperuricemia, Gout, Hepatitis
Streptomycin	8th (vestibular) nerve damage, nephrotoxicity.

- ❖ **DOTS (Directly observe therapy short-course)**
  - o Initially daily therapy for 2 weeks followed by drugs 3 times/week

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Categories of Anti-tuberculosis Drugs: WHO	Group 1 (First line drugs): Isoniazid, Rifampicin, Ethambutol, Pyrazinamide Group 2 (Injectable agents): Kanamycin, Amikacin, Capreomycin, Streptomycin Group 3 (Fluoroquinolone): Levofloxacin, Moxifloxacin, Ofloxacin Group 4 (Oral bacteriostatic agents): Ethionamide, Cycloserine, Para-Aminosalicyclic acid (PAS), Prothionamide Group 5 (Unclear role): Clofazamine, Linezolid, Amoxicillin/Clavulanate, Imipenem/cilastatin, High dose isoniazid, Clarithromycin, Bedaquiline
Multi-Drug Resistant TB (MDR-TB)	❖ **TB which is resistant to isoniazid and rifampicin** ❖ How to treat MDR-TB (Regimen) *Step 1* – *Choose any of the following Injectable (Group 2 drugs)*: *Kanamycin, Amikacin* *Step 2* – *Choose a higher generation fluoroquinolone (Group 3 drugs)*: *Levofloxacin, Moxifloxacin* *Step 3* – *Add group 4 Drugs*: *Cycloserine/Terizidone, Para-Aminosalicyclic acid (PAS), Ethionamide/Prothionamide* Note: ❖ Add two or more Group 4 drugs ❖ **Always use a higher generation fluoroquinolone (ciprofloxacin is not effective and never use it)** ❖ Intensive phase for 8 months (includes injectable) --- and a total of 20 months therapy is advised
Extensive Drug Resistant TB (XDR-TB)	❖ **TB which is resistant to isoniazid + rifampicin (MDR-TB) + any of the fluoroquinolone (such as levofloxacin or Moxifloxacin) and to at least one of the three injectable second-line drugs (Amikacin, capreomycin or kanamycin).** ❖ How to treat XDR-TB Step 1 – Use pyrazinamide and any other Group 1 agent that may be effective. Step 2 – Use an injectable agent to which the strain is susceptible and consider an extended duration of use (12 months or possibly the whole treatment). If resistant used an agent that has used never before Step 3 – Use a higher-generation fluoroquinolone such as Moxifloxacin or Gatifloxacin Step 4 – Use all Group 4 agents that have not been used extensively in a previous regimen or any that are likely to be effective. Step 5 – Add two or more Group 5 drugs (consider adding bedaquiline) Note: Intensive phase for 8 months (includes injectable) --- and a total of 20 months therapy is advised
How to Follow Up a Patient of TB	❖ Conversion of cultures from positive to negative is the most reliable indicator of response to treatment. ❖ For smear-positive pulmonary TB patients treated with first-line drugs, sputum smear microscopy may be performed at completion of the intensive phase of treatment ❖ if the specimen obtained at the end of the intensive phase (month 2) is smear-positive, continue with the intensive phase, sputum smear microscopy should be obtained at the end of the third month ❖ if the specimen obtained at the end of month 3 is smear-positive, sputum culture and drug susceptibility testing (DST) should be performed

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Bronchiectasis

Interpretation	❖ X-ray chest of patient AP view, taken on date XYZ, no bony pathology seen, no subcutaneous air, no visible line, tube or any bony pathology seen ❖ There are multiple ring shadows involving the mid and lower zones of both lung field, more on right side
Diagnosis	❖ **Bilateral bronchiectasis**
Definition	❖ Irreversible dilatation of airways due to inflammatory destruction of airway walls resulting from persistently infected mucus
Microbiology	❖ **Hemophilus influenzae** is the most common organism recovered from non-cystic fibrosis patients ❖ Others include **P. aeruginosa**, S. aureus, & nontuberculous mycobacteria
Causes	❖ Cystic fibrosis (most common) ❖ Primary ciliary dyskinesia (aka immotile cilia syndrome) ❖ Lung infection (tuberculosis, fungal infections, lung abscess, pneumonia) ❖ Localized obstruction (foreign body, tumors) ❖ Allergic bronchopulmonary aspergillosis ❖ Panhypogammaglobulinemia
Clinical features	❖ Chronic Cough ❖ Copious, foul-smelling, purulent sputum is characteristic. ❖ Haemoptysis ❖ Dyspnea and wheezing occur in 75% of patients ❖ Coarse crackles over the affected side ❖ Associated with Fever, clubbing, weight loss, Halitosis (Bad breath)
Investigation	❖ CXR o Nonspecific: increased markings, linear atelectasis, loss of volume in affected areas o Specific: **"tram tracking"** – parallel narrow lines radiating from hilum, cystic spaces, honeycomb like structures ❖ **High-resolution CT (diagnostic, gold standard)---Signet rings** ❖ Sputum cultures (routine + AFB) ❖ Serum Ig levels ❖ Sweat chloride if cystic fibrosis suspected (upper zone predominant)
Treatment	❖ Chest physiotherapy with postural drainage----For 5–10 minutes once or twice daily ❖ Antibiotic therapy---10-14 days ❖ Inhaled bronchodilators ❖ Surgery ---excision of bronchiectactic areas ❖ Bronchoscopy if haemoptysis not resolved with medical therapy--- May require embolization of bronchial arteries or surgical resection.

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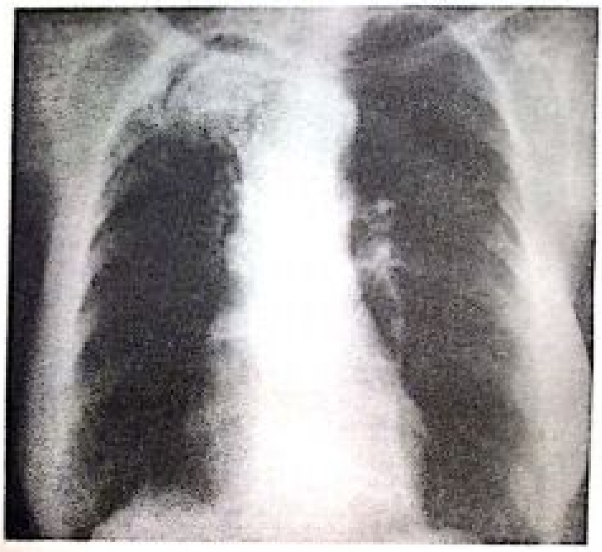
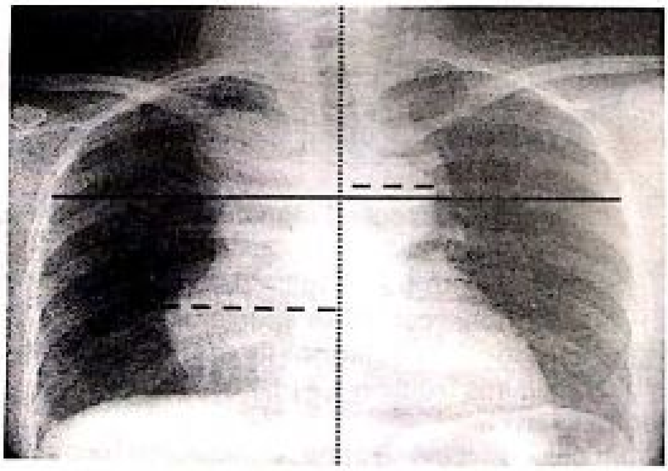
Aspergilloma



Interpretation	❖ X-ray chest of patient AP view, taken on date XYZ, no bony pathology seen, no subcutaneous air, no visible line, tube or any bony pathology seen ❖ A mass in cavity with crescentic air shadow above it in apical region ❖ **Meniscus Sign:** ○ It is intracavitary body surrounded by air –positive in aspergilloma
Diagnosis	❖ **Aspergilloma**
Investigations	❖ Serum precipitin antibody for aspergilloma ❖ Sputum examination (hyphal fragments may be found) ❖ Sputum c/s ❖ Chest x-ray: a solid opacity within a cavity often associated with a rim of air. ❖ High titres IgG Aspergillus precipitins (95%) ❖ Ct-scan
Treatment:	❖ If asymptomatic---then follow up ❖ If symptomatic ---antifungal agents-voriconazole/amphotericin

Mediastinal Widening



Interpretation	❖ Widening of superior mediastinum
Differential Diagnosis	❖ Lymphoma ❖ Sarcoidosis ❖ Retrosternal goiter

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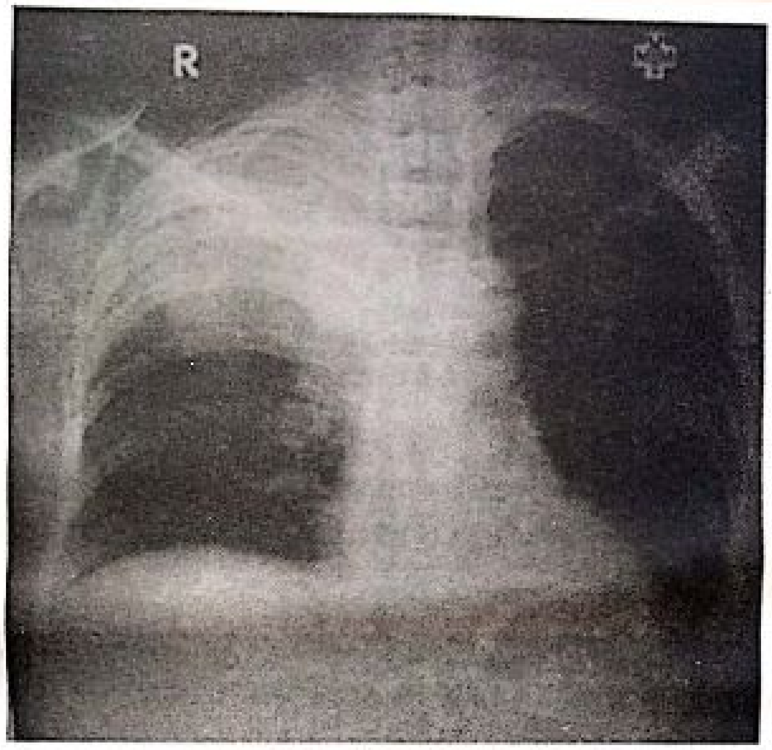
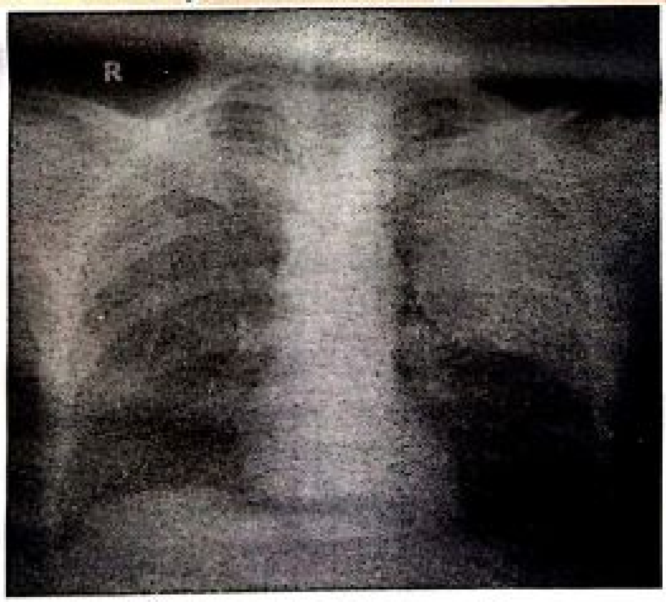
X-Rays

Mass Lesion



Interpretation	❖ X ray chest PA view showing opacity with irregular margin occupying the right upper and part of mid zone
Diagnosis	❖ Bronchial Carcinoma
Differential Diagnosis	❖ Tuberculosis ❖ Consolidation

Solitary Pulmonary Nodule



Interpretation	❖ X ray chest PA view showing homogenous rounded nodular shadow with clear margin in left mid zone
Causes	❖ Consolidation, tuberculoma, bronchial carcinoma or bronchial adenoma

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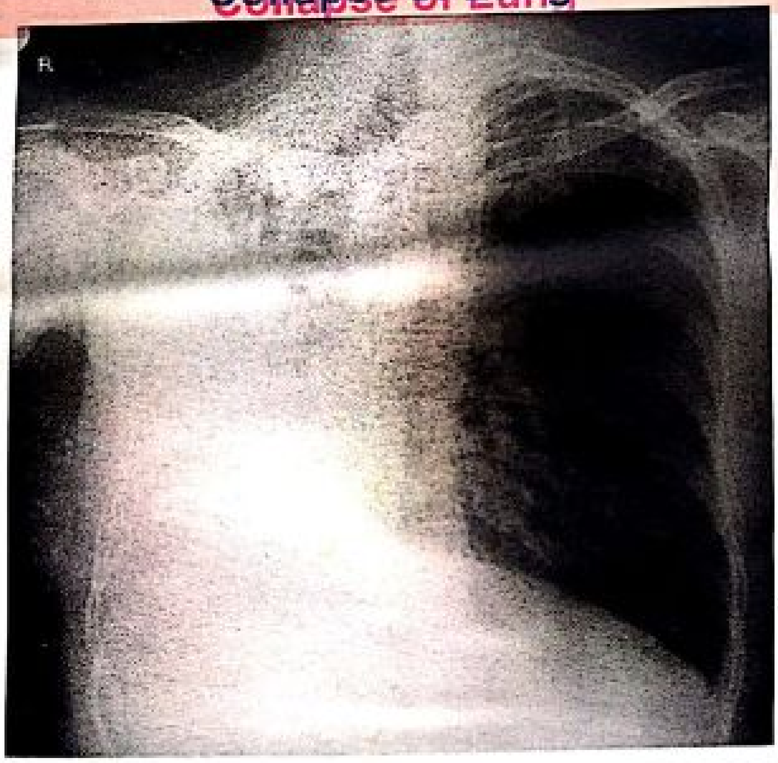
Multiple secondaries in Lung

Interpretation	❖ X ray chest PA view showing multiple, nodular shadows of variable size and shape, some having cannon ball appearance in both lung fields
Diagnosis	❖ Multiple secondary deposits in the lung
Source	❖ Breast carcinoma, stomach carcinoma, prostate carcinoma, renal cell carcinoma

Collapse of Lung



Interpretation	❖ X ray chest PA view showing homogenous opacity involving the whole right lung ❖ Trachea and heart shifted to right
Diagnosis	❖ Collapse of Right lung
Investigations	❖ CT scan of chest ❖ Bronchoscopy

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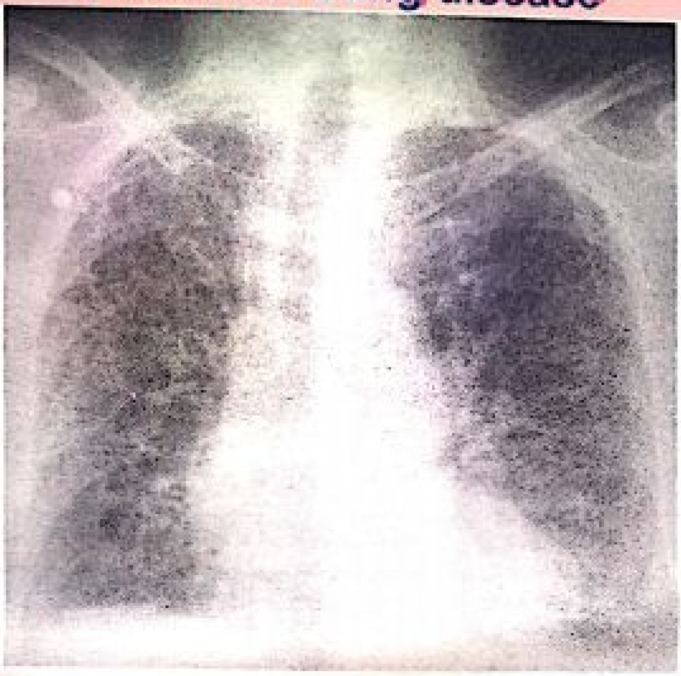
Interstitial Lung disease



Interpretation	❖ X ray chest PA view showing Reticulonodular shadow involving all zones of Lung fields
Diagnosis	❖ Diffuse parenchymal lung disease/ILD
Introduction	❖ It is **the most common and most important** type of idiopathic interstitial pneumonia ❖ It is characterized by pathologic pattern called "**Usual Interstitial Pneumonia (UIP)**"
Clinical Features	❖ Presentation age: 50 -70 years of age (uncommon before 50 years) ❖ Dyspnea, Non-productive cough, Crackles, Clubbing, Features of cor-pulmonale
Investigations	❖ PFTs-----Restrictive pattern: decreased lung volumes and compliance ❖ Chest X-ray ❖ HRCT-----Ground glass appearance initially and honeycomb lung appearance in advanced disease ❖ Lung biopsy (in selected cases---where the diagnosis is uncertain) ❖ Transbronchial lung biopsy ---Most accurate
Diagnosis	❖ When no associated cause is evident of ILD this is IPF. ❖ A diagnosis of IPF/ UIP can be made with 90% confidence in patients over 65 years of age who have o Idiopathic disease by history and who demonstrate inspiratory crackles on physical examination; o Restrictive physiology on pulmonary function testing. o Characteristic radiographic evidence of progressive fibrosis over several years; ❖ Diffuse, patchy fibrosis with pleural-based honeycombing on high-resolution CT scan
Treatment	❖ Note that: Prednisolone (0.5mg/kg) plus azathioprine (2-3 mg/kg) for 2 months are effective in patients with RB-ILD (Respiratory bronchiolitis-associated interstitial lung disease, nonspecific interstitial pneumonia (NSIP), or COP (Cryptogenic organizing pneumonia (COP, formerly bronchiolitis obliterans organizing pneumonia [BOOP]) ❖ The same therapy is ineffective in patients with IPF. Since this therapy carries significant morbidity, experts do not recommend. ❖ In 2014, two agents, **Nintedanib** and **Pirfenidone**, were approved for the treatment of IPF (but very costly) ❖ **Lung transplantation (only definitive cure)**

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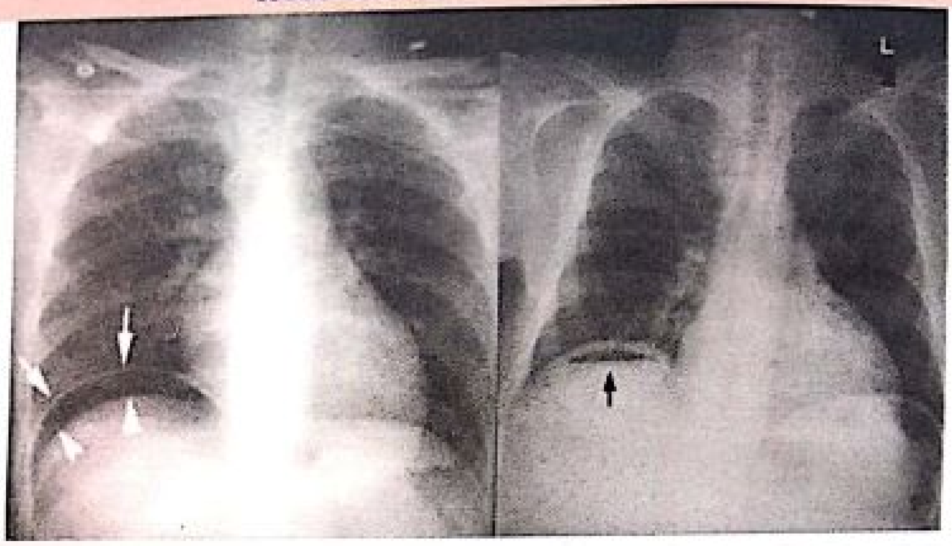
Intestinal Perforation



Interpretation	❖ Air under diaphragm on right side
Diagnosis	❖ Intestinal perforation

Intestinal Obstruction

Interpretation	❖ Multiple air fluid levels seen
Diagnosis	❖ Intestinal obstruction

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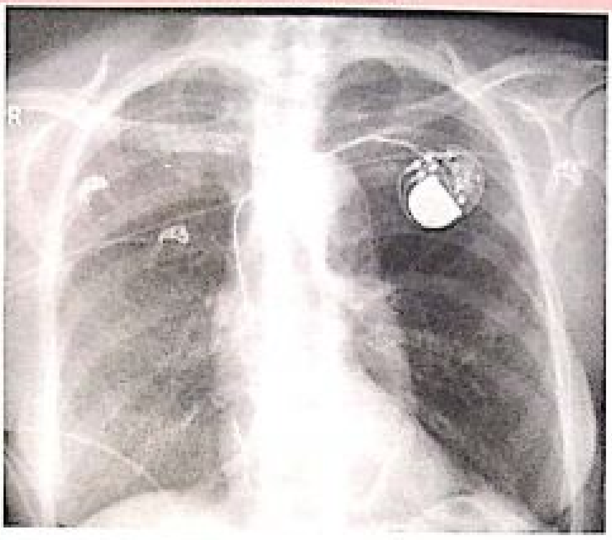
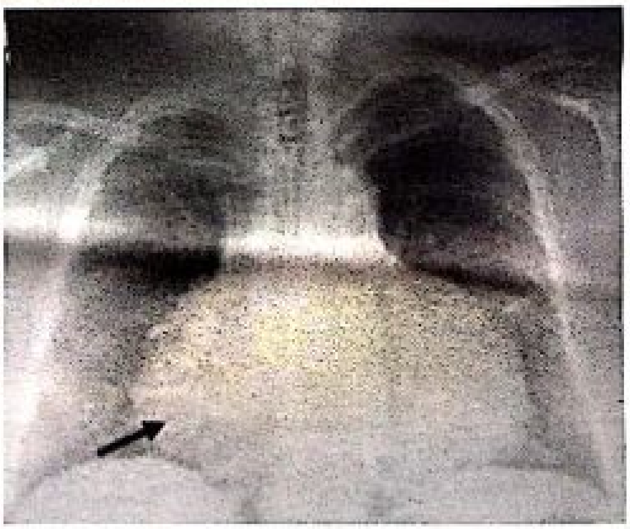
Pacemaker



Interpretation	❖ X ray chest PA view showing o Pacemaker on left side
Diagnosis	❖ Single chamber pacemaker
Indications	❖ Complete heart block (with syncope or stokes-Adam's attack) ❖ Sick sinus syndrome
Complications	❖ Infections ❖ Displacement ❖ Malfunction or pacemaker failure

Pericardial Effusion



Interpretation	❖ X ray chest PA view showing o Heart is enlarged in transverse diameter, globular and pear shaped
Diagnosis	❖ Pericardial effusion
Cause	❖ Tuberculosis ❖ Lymphoma ❖ Following acute pericarditis ❖ Collagen disease
Signs in favor of Pericardial effusion	❖ Raised JVP ❖ Tachycardia ❖ Muffled heart sounds

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Pulmonary Edema

Interpretation	❖	X ray chest PA view showing ○ Fluffy or woolly opacities spreading from both hilar regions giving a butterfly or bat-wing's appearance ○ Heart is enlarged in transverse diameter
Diagnosis	❖	Pericardial effusion
Most common cause	❖	LVF
Treatment	❖	(Mnemonic LMNOP) ○ Loop diuretics (e.g. Furosemide 80– 250mg IV either as IV over 1h or boluses titrated to response (larger doses are needed in renal failure) ○ Morphine 2.5mg (venous vasodilator, Decreases afterload) ○ Nitrates (e.g. IV GTN) ○ O_2 high-flow ○ Position (sit the patient up—decreases pre-load) ○ If renal cause: ----If no response, hemodialysis or hemofiltration ○ If cardiac cause: ---Inotropic agents especially in hypotensive patients

Mitral Stenosis

Interpretation	❖	X-ray chest PA view showing fullness of pulmonary conus with straightening of the left border of heart
Diagnosis	❖	**Mitral stenosis**

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Clavicle fracture

Key findings	❖ Look for discontinuity in clavicle
Diagnosis	❖ Clavicle fracture.

Rickets

Key findings	❖ X-ray of both hands in AP view showing o Widening, splaying and cupping o Distance between epiphysis and metaphysis is increased
Diagnosis	❖ Rickets
Investigations	❖ Serum calcium and phosphate (low) ❖ Serum alkaline phosphatases (high) ❖ Serum 25 hydroxy proline (low or absent)
Treatment	❖ Adequate exposure to sunlight ❖ Calcium and Vitamin D supplementation

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X-Rays

Acromegaly

Key findings	❖ X-ray of both hands in AP view showing o Hands are enlarged o Increases soft tissue shadows o Tufting of terminal phalanges
Diagnosis	❖ **Acromegaly**
Investigations	❖ Growth hormone (GH) levels vary during the day and are therefore not diagnostic ❖ The definitive test is Oral glucose tolerance (OGTT) with serial GH measurements. ❖ A pituitary MRI may demonstrate a pituitary tumor
Treatment	❖ Pituitary adenoma resection. If not cured, treat with octreotide (somatostatin analog) or pegvisomant (growth hormone receptor antagonist), dopamine agonists (e.g., cabergoline)

Rheumatoid Arthritis

Key findings	❖ X-ray of both hands in AP view showing o Periarticular osteopenia in metacarpophalangeal joints and proximal PIP joints o Reduction of joint spaces of PIP joints o Ulnar deviation o Thumb Z deformity
Diagnosis	❖ **Rheumatoid hand**

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TOACs Related Question on Rheumatoid

	Osteoarthritis	Rheumatoid arthritis
Pathogenesis	❖ Noninflammatory joint disease is characterized by degeneration of articular cartilage ❖ Osteoarthritis is most often related to mechanical trauma to the affected joints ("wear and-tear" arthritis)	❖ Chronic inflammatory disorder primarily affects the synovial joints ❖ Autoimmune disorder and Associated with HLA-DR4 (4 walls in a **rheum** (room) ❖ Peak onset = 30-50 years, although occurs in all age groups ❖ F:M ratio = 3:1
Presentation	❖ Asymmetric joint involvement. ❖ **Morning stiffness of <15 minutes** ❖ Improving with rest. ❖ Pain in weight-bearing joints after use ❖ Knee cartilage loss begins medially ("bowlegged").	❖ Symmetric joint involvement ❖ **Morning stiffness of > 1 hour** ❖ Improving with activity ❖ Systemic symptoms (fever, fatigue, weight loss).
Joint Findings	❖ Heberden's nodes→ prominent osteophytes at DIP joints ❖ Bouchards nodes→ prominent osteophytes at PIP joints ❖ **Involves DIP and PIP, but not MCP**	❖ Swan-Neck deformity ❖ Boutonniere deformity ❖ Cervical joint involvement most commonly C1, C2 → **always perform X-ray cervical spine before ETT** ❖ Ulnar deviation of fingers ❖ **Involves MCP, PIP, wrist; not DIP**
Radiographic Hallmarks	*Mnemonic: **LOSS*** ❖ *<u>L</u>oss of joint space-- **typically non-uniform*** ❖ <u>O</u>steophytes ❖ *<u>S</u>ubarticular sclerosis* ❖ *<u>S</u>ubchondral cysts*	❖ Loss of joint space-- **typically uniform** ❖ Soft tissue swelling ❖ **Erosions** ❖ Periarticular osteopenia
Lab Findings	❖ RA factor→ negative ❖ ESR, CRP → normal ❖ Anti-CCP→ negative	❖ RA factor→positive (70%) ❖ ESR, CRP → raised ❖ Anti-CCP→ positive (90% --more specific)

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Some Other Features of Rheumatoid Arthritis and Management

Poor Prognostic Features	❖ Rheumatoid factor positive, Anti-CCP antibodies, HLA DR4, Poor functional status at presentation ❖ X-ray: early erosions (e.g. after < 2 years) ❖ Extra articular features e.g. nodules ❖ Insidious onset & Female gender is associated with a poor prognosis.
Other Conditions Associated with A Positive RF	❖ Sjogren's syndrome (around 100%), Felty's syndrome (around 100%), Cryoglobulinemia II & III 40-100%, Infective endocarditis (= 50%), SLE (= 20-30%), Systemic sclerosis (= 30%)
Extra-Articular Complications with Rheumatoid Arthritis	❖ **Respiratory:** o Pulmonary fibrosis & nodules, pleural effusion, bronchiectasis (especially nonsmokers), bronchiolitis obliterans, complications of drug therapy e.g. methotrexate pneumonitis, infection (possibly atypical) secondary to immunosuppression ❖ **Ocular:** o keratoconjunctivitis sicca (most common), episcleritis (erythema), scleritis (erythema and pain), keratitis, corneal ulceration, steroid-induced cataracts, chloroquine retinopathy ❖ **Osteoporosis** ❖ **Amyloidosis (AA)** ❖ **Felty's syndrome** o RA + splenomegaly + low white cell count+ leg ulcer in chronic seropositive RA ❖ **Caplan's syndrome** o RA + Pneumoconiosis + Lung Nodules
Management of Rheumatoid Arthritis	❖ **Initial therapy: (NICE guidelines 2009)** o Patients with newly diagnosed active RA start a combination of DMARDs (including methotrexate and at least one other DMARD), plus short-term glucocorticoids ❖ **DMARDs:** o **Methotrexate** is the most widely used DMARD. ▪ Pregnancy: ✓ Women should avoid pregnancy for at least 3 months after treatment has stopped ✓ BNF also advises that men using methotrexate need to use effective contraception for at least 3 months after treatment ▪ Prescribing methotrexate: ✓ Methotrexate is taken weekly, rather than daily ✓ Check CBC, RFTs & LFTs before starting treatment and repeated weekly until therapy stabilized, thereafter patients should be monitored every 2-3 months ✓ Folic acid 5mg once weekly should be co-prescribed, taken more than 24 hours after methotrexate dose ✓ The starting dose of methotrexate is 7.5 mg weekly (source: BNF) ✓ Avoid prescribing trimethoprim or cotrimoxazole concurrently→ Increases risk of marrow aplasia o Sulfasalazine o Leflunomide o Hydroxychloroquine ❖ **TNF-inhibitors: (can cause Drug Induced lupus)** o The current indication for TNF-inhibitor is an inadequate response to at least 2 DMARDs including methotrexate. o It includes ✓ Etanercept: (can cause demyelination & reactivation of TB) ✓ Infliximab (risks include reactivation of TB) ✓ Rituximab: ❖ Other important treatment options include analgesia, physiotherapy and surgery.

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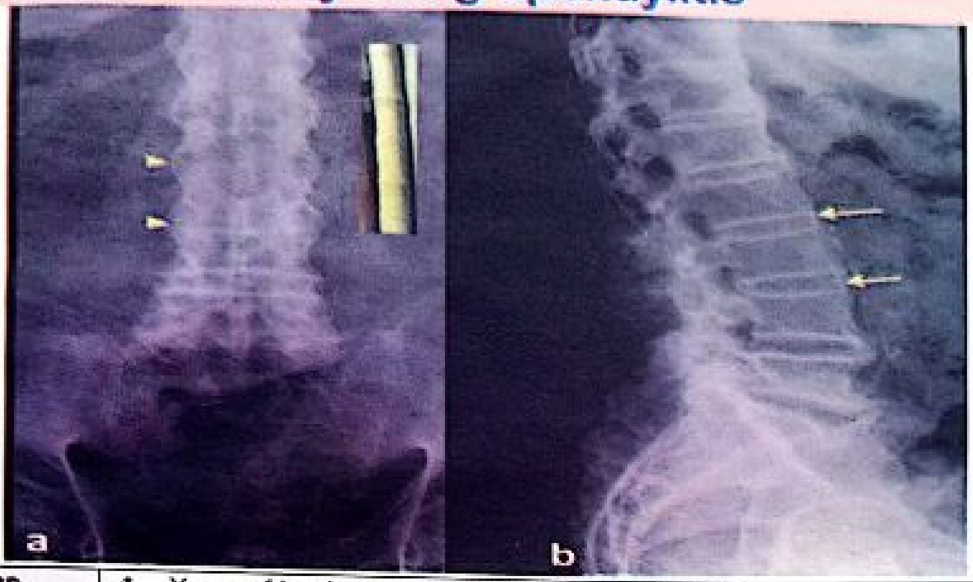
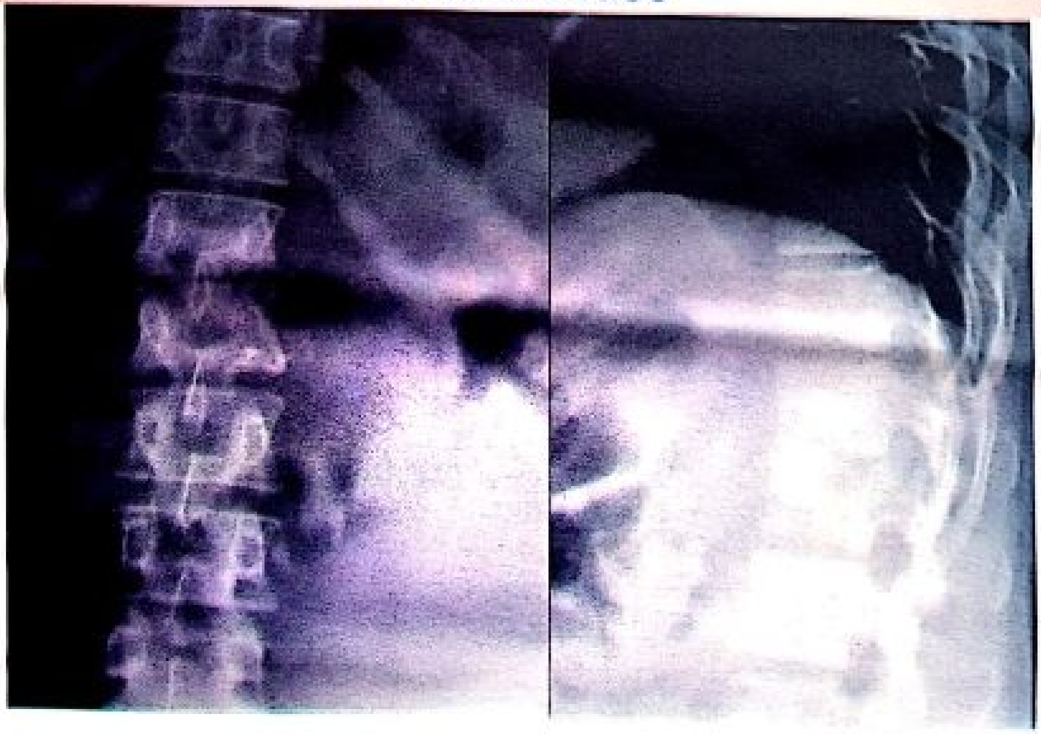
Ankylosing Spondylitis



Key findings	❖ X-ray of lumbosacral spine AP view showing ○ Calcification of anterior longitudinal and interspinous ligaments ○ There is syndesphomytes formation with bridging giving rise to bamboo spine
Diagnosis	❖ **Ankylosing spondylitis**
Investigation	❖ HLA-B27

Potts Disease



Key findings	❖ X-ray of lumbosacral spine AP view showing ○ Reduction of joint spaces with destruction
Diagnosis	❖ **Potts disease**
Differential diagnosis	❖ Trauma ❖ Pyogenic infections ❖ Secondary deposit

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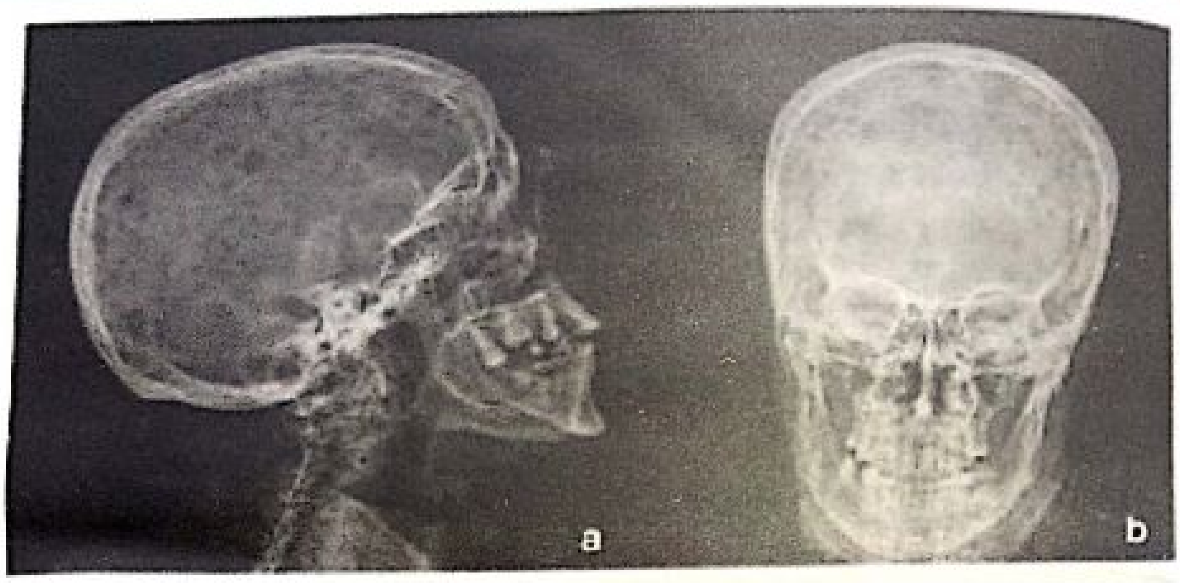
Multiple Myeloma



Key findings	❖ X-ray of Skull showing ○ Multiple punched out lytic lesion of variable size and shape involving whole of skull
Diagnosis	❖ **Multiple Myeloma**
Differential diagnosis	❖ Secondary deposits ❖ Hyperparathyroidism (usually are small and have pepper pot appearance)

Hereditary hemolytic anemia

Key findings	❖ X-ray of Skull in lateral view showing ○ Thinning of outer table ○ Thickening and coarsening of trabeculae giving rise to hair on end appearance.
Diagnosis	❖ **Hereditary hemolytic anemia most likely beta thalassemia**
Investigation	❖ CBC ❖ Retic count ❖ Serum bilirubin ❖ HB electrophoresis

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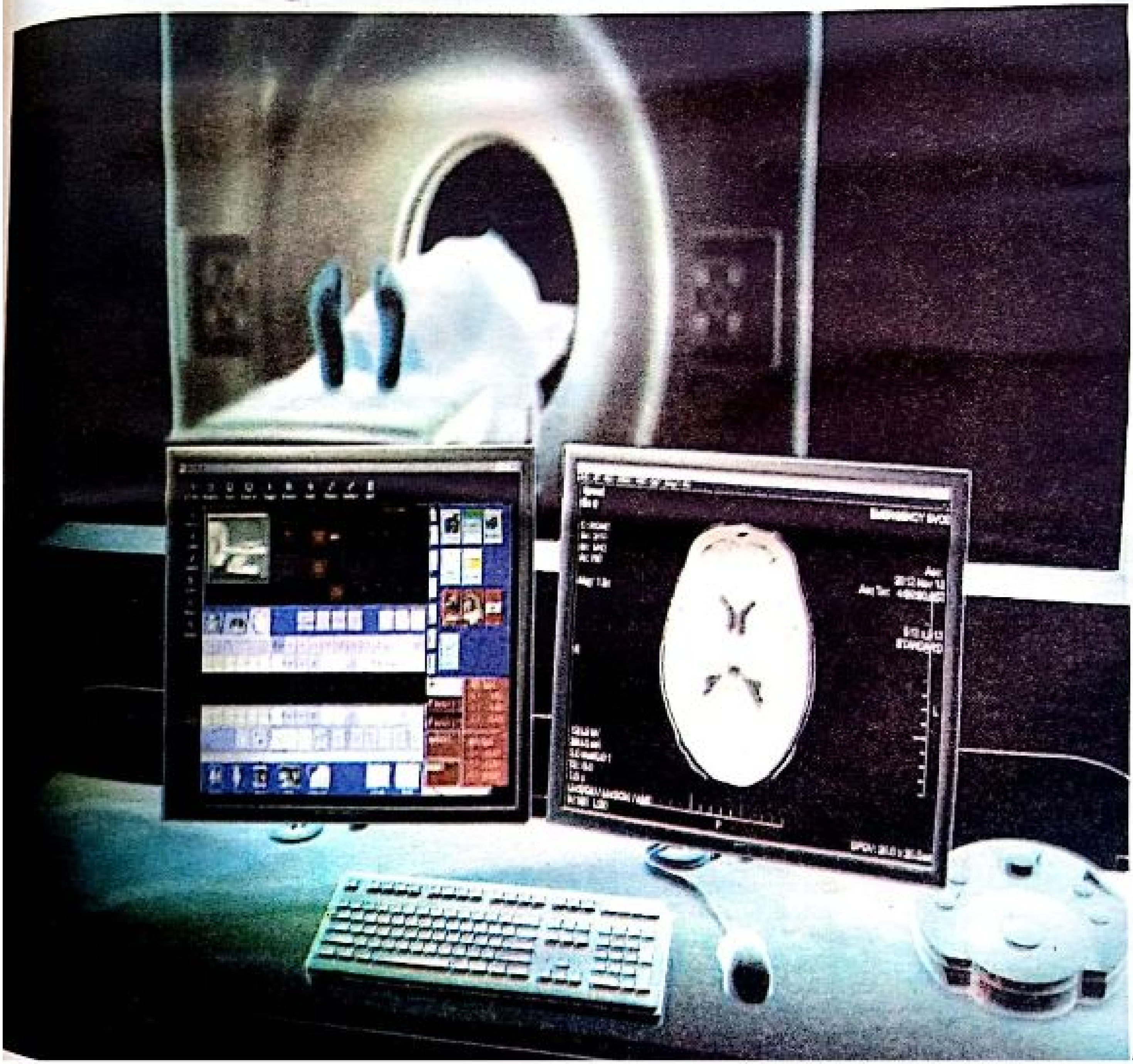
Station CT- Scans



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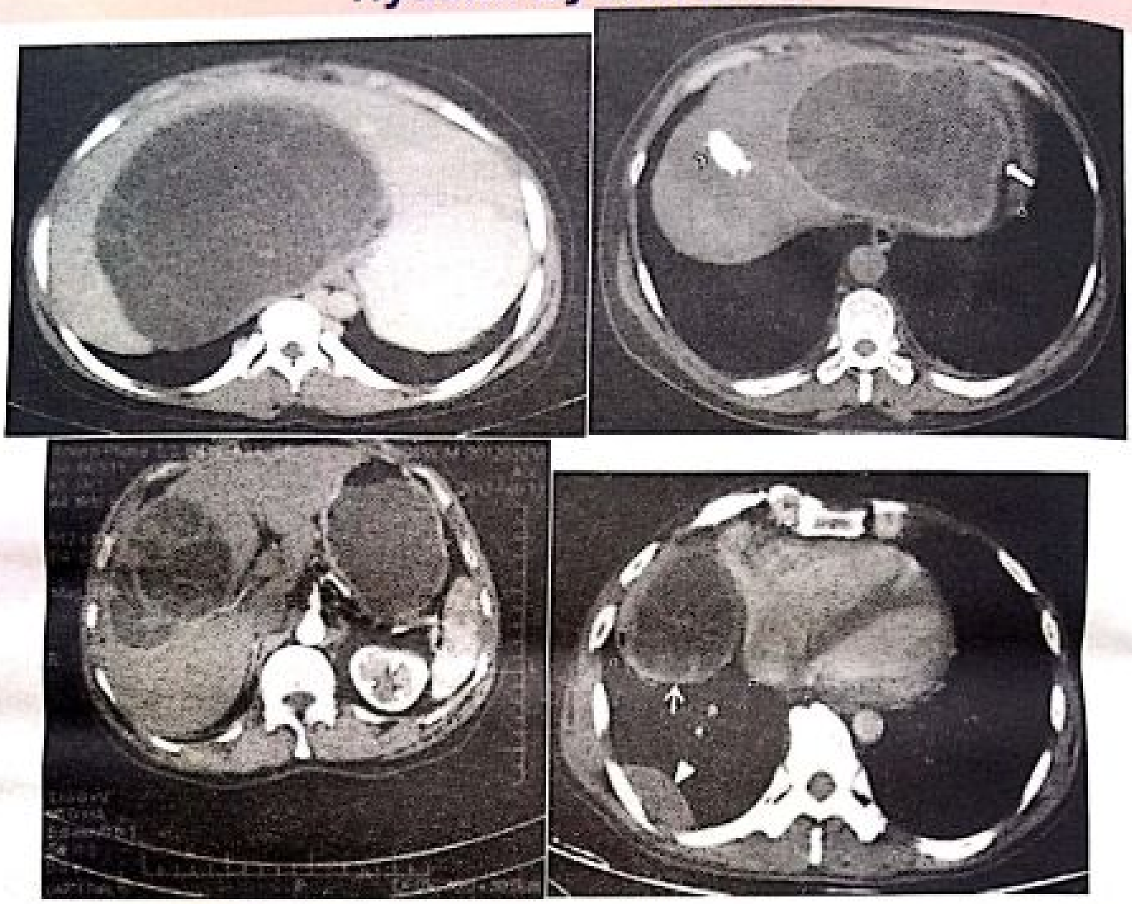
CT-Scans

Hydatid Cyst in Liver



Key findings	❖ CT scan of abdomen showing Multiple hypodense areas with multiple septations involving liver
Diagnosis	❖ **Hydatid cysts in liver**

Toacs Related Question on Hydatid liver disease, Pyogenic liver abscess, Amoebic liver abscess

	Hydatid liver disease	Pyogenic liver abscess	Amoebic liver abscess
Causative organism	❖ *Echinococcus granulosus*	❖ E. coli (most common) ❖ Streptococcus milleri ❖ Strep. Fecalis & Bacteroides	❖ Entamoeba histolytica
Pathophysiology	❖ it can affect any organ, but liver is the most common followed by lungs, then spleen	❖ Ascending infection due to biliary obstruction (ascending cholangitis), or spread from empyema of gall bladder	❖ Trophozites enter portal circulation
Features	❖ Cysts in liver (75%), lung , bone and brain	❖ Multiple abscess	❖ Single abscess most common in right lobe
Diagnosis	❖ Serology ✓ Casoni test= 80% positive ✓ Indirect hemagglutination test most accurate test ❖ CT scan = investigation of choice	❖ US abdomen ❖ Alkaline phosphatase raised	❖ US abdomen ❖ Detectable antibodies in 95% of patient
Treatment	❖ **Albendazole 400mg 3 times daily for 30 days** ❖ Surgical treatment= ERCP	❖ **Ampicillin + Ciprofloxacin + Metronidazole** ❖ **If penicillin allergic= Ciprofloxacin + clindamycin**	❖ **Metronidazole + Diloxanide furoate**

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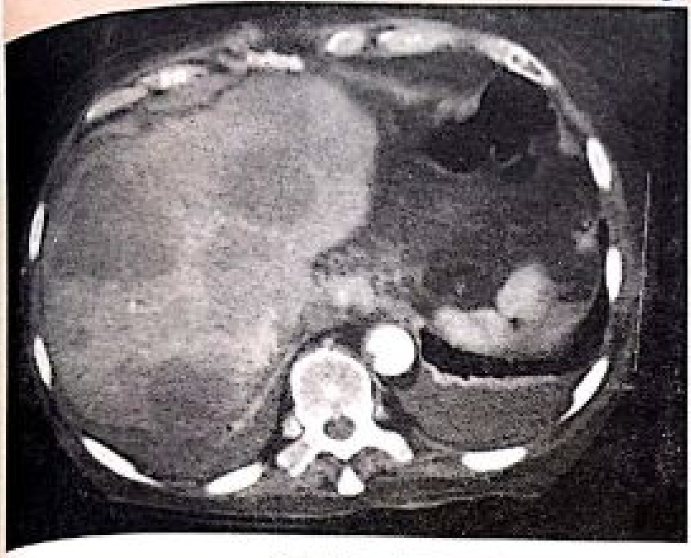
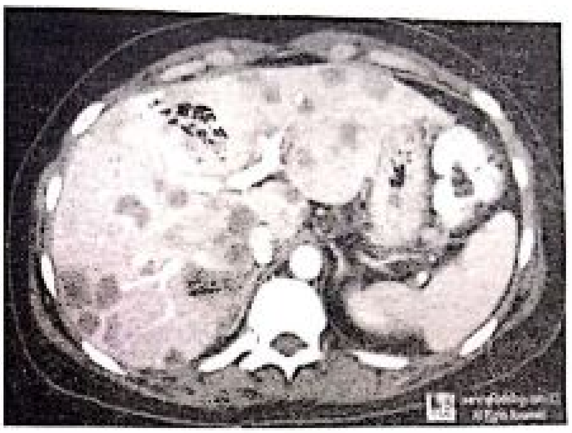
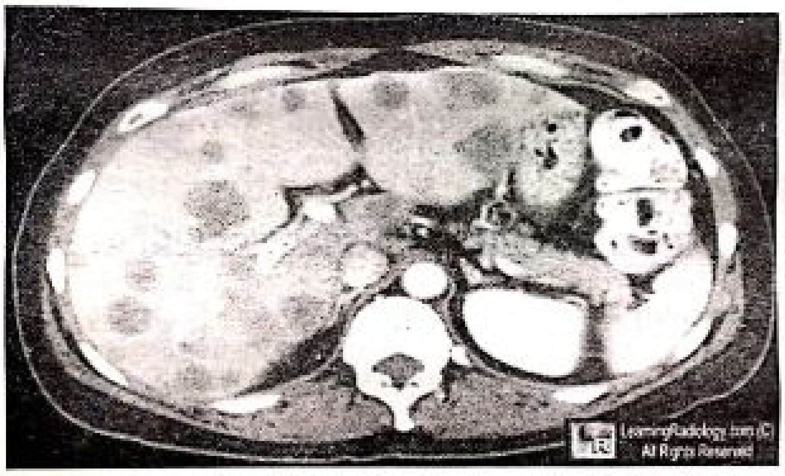
Multiple secondary deposits in Liver

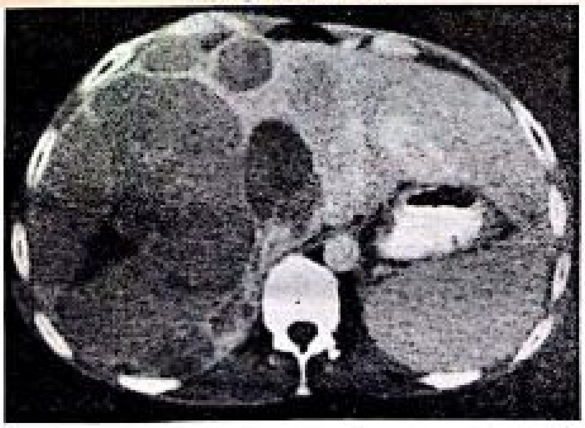






Key findings	❖ CT scan of abdomen showing Multiple hypodense areas involving both lobes of liver
Diagnosis	❖ **Multiple secondary deposits in liver**
Liver metastasis occurs from	❖ Breast, colon and lung cancers

Hepatoma



Key findings	❖ CT scan of abdomen showing a large mass with mixed density in liver
Diagnosis	❖ **Hepatoma**

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Polycystic Disease of Kidney

Key findings	❖ CT scan of abdomen showing *Multiple hypodense areas of variable size* and shape in both kidneys
Diagnosis	❖ **Polycystic disease of kidneys**

TOACs Related Question on Polycystic disease of kidneys

Autosomal Dominant Polycystic Kidney Disease	❖ Numerous cysts in cortex and medulla causing bilateral enlarged kidneys ultimately destroy kidney parenchyma. ❖ Autosomal dominant, in which renal parenchyma is replaced by cyst ❖ Manifests between 15 and 30 years of age, even though the genetic defect is present at birth. ❖ The disease occurs bilaterally; the kidneys are greatly enlarged. ❖ Clinical features: ○ Presents with flank pain, hematuria, hypertension, urinary infection, progressive renal failure (50% of individuals). ❖ Types: **ADPKD Type 1**: ○ *85% of cases*; ○ Mutation in PKD1 (which code for polycystin-1); ○ **Chromosome 16** **ADPKD Type 2**: ○ 15% of cases; ○ Mutation in PKD2 (which code for polycystin-2); ○ **Chromosome 4** ❖ Ultrasound diagnostic criteria (in patients with positive family history) ○ Two cysts, unilateral or bilateral, if aged < 30 years ○ Two cysts in both kidneys if aged 30-59 years ○ Four cysts in both kidneys if aged > 60 years ❖ Features ○ Hypertension, recurrent UTIs, abdominal pain, renal stones, chronic kidney disease ❖ Extra-renal manifestations ○ Liver cysts (70%), *Berry aneurysms of the circle of Willis* (8%) ○ Cardiovascular system: *MVP, aortic dilation and dissection* ❖ Treatment: ACE inhibitors or ARBs.
Autosomal Recessive Polycystic Kidney Disease	❖ Cystic dilation of collecting ducts. ❖ **Often presents in infancy**. ❖ Associated with ○ Congenital hepatic fibrosis. ○ Significant oliguric renal failure in utero can lead to **Potter sequence**. ❖ Death from this autosomal recessive disorder results shortly after birth.

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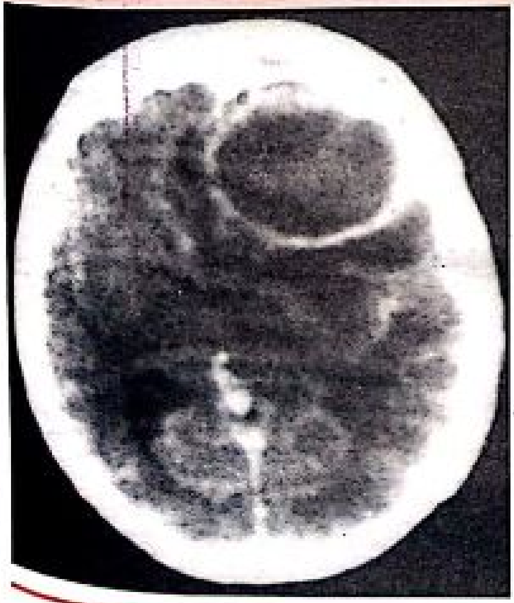
Intracerebral Hemorrhage

Key findings	❖ CT scan of Brain showing Hyperdense area in left parietal region/thalmoganglionic area
Diagnosis	❖ **Intracerebral hemorrhage**
Causes	❖ Trauma ❖ Hypertension ❖ AV malformation ❖ Coagulopathy ❖ Hemorrhagic transformation of an ischemic stroke
Bleeding disorders	❖ Hemophilia ❖ vWD ❖ Platelet disorders ❖ Liver diseases ❖ Vitamin K deficiency ❖ DIC
Treatment	❖ Correction of underlying disorder ❖ Nursing care and physiotherapy ❖ Nimodipine (60mg/4h PO for 3wks, or 1mg/h IVI) is a Ca2+ antagonist that reduces vasospasm and consequent morbidity from cerebral ischaemia ❖ If large: surgical intervention

Brain Abscess



Key findings	❖ CT scan of brain showing Mixed density cystic lesion in left frontal area with perifocal edema ❖ Midline shift towards the right side
Diagnosis	❖ **Intracranial space occupying lesion likely to be brain abscess**
Differential diagnosis	❖ Secondary deposit ❖ Tuberculoma ❖ Toxoplasmosis ❖ Astrocytoma

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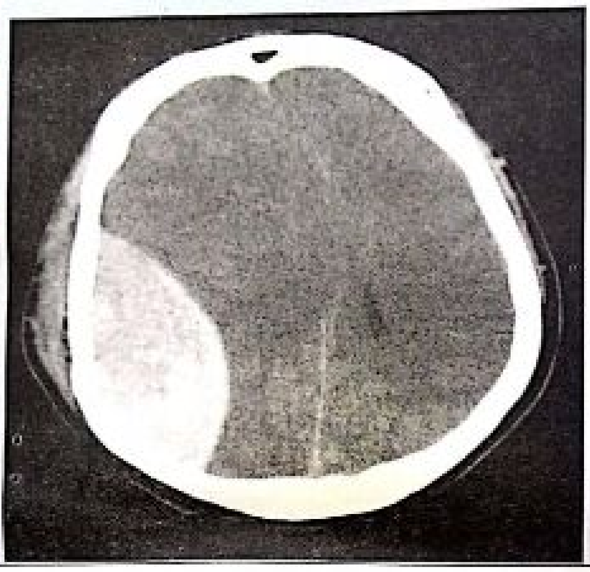
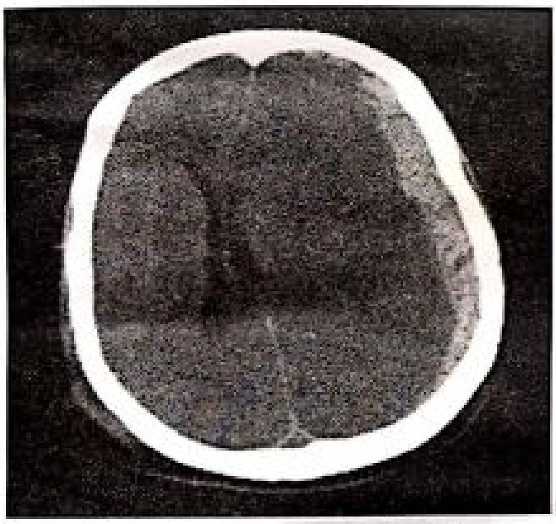
Intracranial Haemorrhage



- **Key Findings:**
  - CT scan of head showing high density biconvex area
- **Diagnosis**
  - Extra-Dural hematoma/Epidural hematoma on right side



- **Key Findings:**
  - CT scan of head showing crescent shaped hyperdense area with midline shift
- **Diagnosis**
  - Subdural hematoma on Left side

- **Key Findings:**
  - CT scan of head showing hyperdense areas with extension into ventricles
- **Diagnosis**
  - Subarachnoid hemorrhage (intraventricular hemorrhage)

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TOACS Related Intracranial Haemorrhage

Epidural hematoma	❖ **Rupture of middle meningeal artery (branch of maxillary artery), often 2° to skull fracture.** ❖ **Lens shaped (biconvex / lentiform) hematoma.** ❖ Involving the pterion (thinnest area of the lateral skull)—temporal lobe ❖ **Lucid interval** (temporary improvement in a patient's condition after a traumatic brain injury, after which the condition deteriorates) ❖ **CN III palsy.**
Subdural hematoma	❖ **Rupture of bridging veins/great cerebral vein/diploic vein** ❖ **Crescent-shaped hematoma.** ❖ Most commonly secondary to trauma **e.g. old person/alcohol falling over** ❖ Most commonly occur around **the frontal and parietal lobes** ❖ Risk factors include **old age, alcoholism and anticoagulation** ❖ Features: o Headache o **Classically fluctuating conscious level** o Raised ICP
Subarachnoid hemorrhage	❖ Bleeding due to trauma, or rupture of an aneurysm (such as a saccular aneurysm) or arteriovenous malformation. ❖ Patients complain of "worst headache of my life." + Neck stiffness on examination ❖ Investigations: o CT: negative in 5% o LP: ✓ Done after 12 hrs.(in Pass-medicine) and 4-10 days in First aid (allowing time for xanthochromia to develop) ✓ If the CSF examination revealed xanthochromia, or there was still a high level of clinical suspicion, **then cerebral angiography would be the next step.** o Cerebral angiography: ❖ Complications: o ↑ Risk of developing communicating and/or obstructive hydrocephalus. o Typically, the development of DCI (delayed cerebral ischemia) starts **on day 3 after the initial SAH** and is **maximal at days 5-14** and resolves on **day 21**. ❖ Treatment: Nimodipine (60mg 4 hourly if BP allows) used to prevent/reduce vasospasm.

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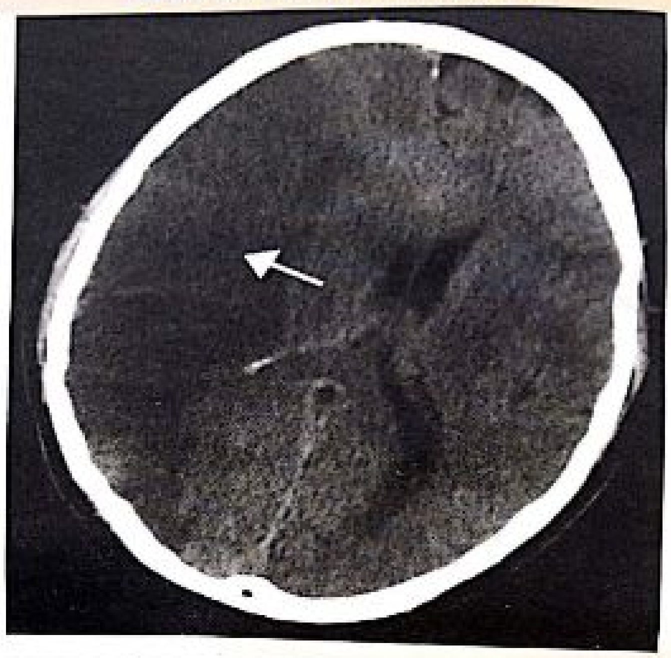
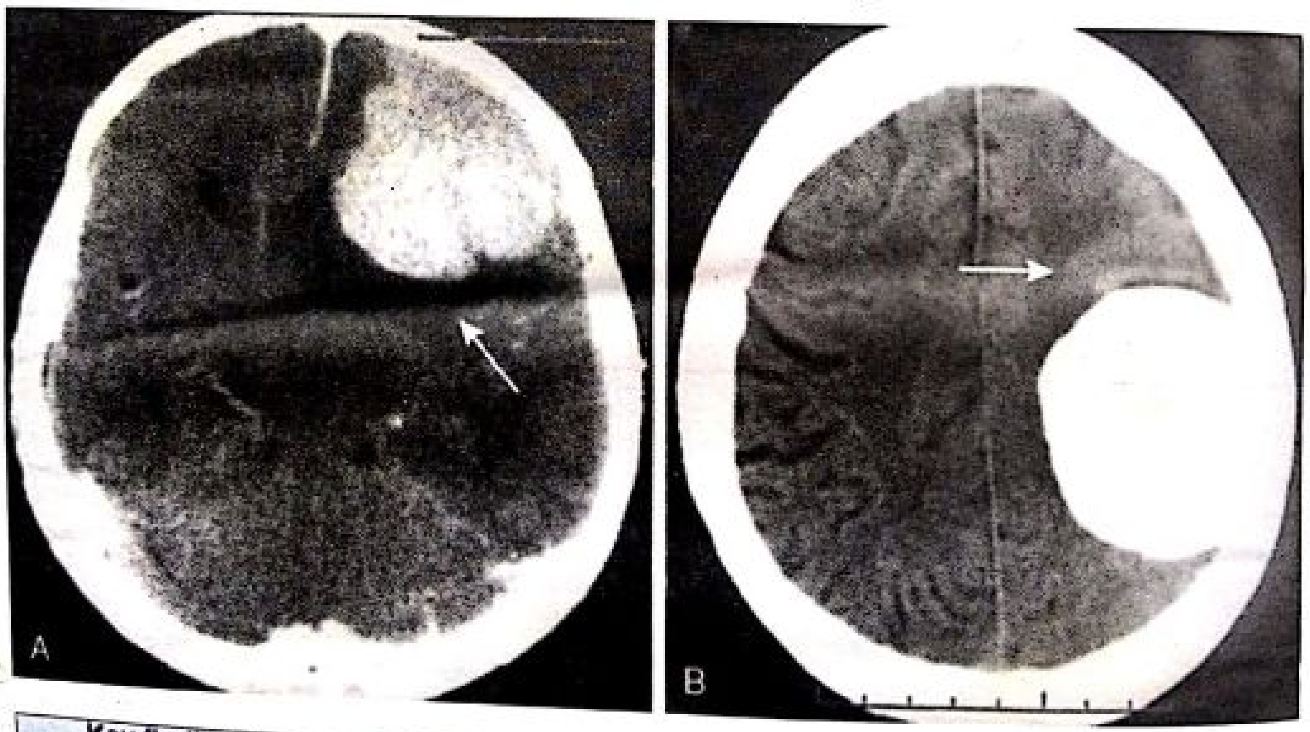
Cerebral Infarction



Key findings	❖ CT scan of Brain showing Hypodense area on right side with shifting of ventricles to left side
Diagnosis	❖ **Right sided cerebral infarction**

Meningioma



Key findings	❖ CT scan of Brain showing Large mixed density rounded mass in frontal region in pic A while in parietotemporal area in image B with midline shift
Diagnosis	❖ **Meningioma**

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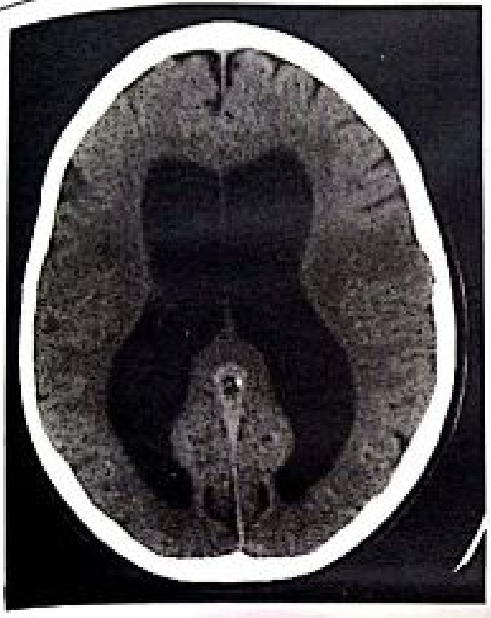
Hydrocephalous

	❖ **Key Findings:** ○ CT scan of head showing markedly dilated ventricles ❖ **Diagnosis** ○ Hydrocephalous
	❖ **Key Findings:** ○ CT scan of head showing Hypodense area through out with thin rim of brain outside the hypodense area ❖ **Diagnosis** ○ Hydrocephalous (non-communicating)

TOACS related to Hydrocephalous

❖ This condition denotes increased volume of cerebrospinal fluid (CSF) within the cranial cavity.

Communicating Hydrocephalus	❖ Free flow of CSF between the ventricles and the subarachnoid space
Non-Communicating Hydrocephalus	❖ Obstructed flow of CSF from the ventricles to the subarachnoid space
Hydrocephalus Ex Vacuo	❖ Mimics hydrocephalous ❖ Appearance of ↑CSF on imaging, but is actually due to decreased brain tissue and neuronal atrophy (e.g., Alzheimer disease)

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Station Instruments

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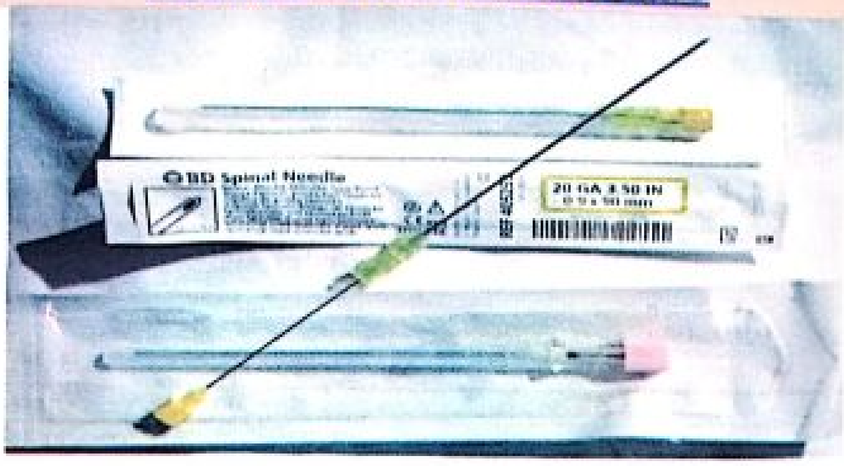
Lumbar Puncture Needle



<table>
<tr><td>Site</td><td>❖ L3-L4/ L4-L5</td></tr>
<tr><td>Uses</td><td>
<table>
<tr><th>Diagnostic</th><th>Therapeutic</th></tr>
<tr><td>❖ Infections:
✓ Meningitis
✓ Encephalitis
❖ Inflammatory:
✓ Multiple sclerosis
✓ GBS
❖ Sub arachnoid hemorrhage
❖ Unexplained coma
❖ Oncologic
❖ Metabolic</td><td>❖ Administrations of:
o Analgesic
o Anesthesia
o Antibiotics
o Anti-neoplastic (e.g. Methotrexate in ALL)</td></tr>
</table>
</td></tr>
<tr><td>Contraindications</td><td>❖ Increased ICP
❖ Coagulopathy
❖ Prior to lumbar surgery
❖ Infection at/near the puncture site
❖ Space occupying lesion
❖ Significant cardiorespiratory compromise
❖ Degenerative disc disease</td></tr>
<tr><td>Complications</td><td>❖ Headache (most common)
❖ Bleeding
❖ Infection
❖ Failure of the procedure
❖ Herniation (serious but very rare)</td></tr>
<tr><td>Procedure</td><td>❖ Sitting or lying position.
❖ Consent, pre-requisites, explain procedure and complications
❖ In lying position, the patient is put in lateral decubitus position with his knees drawn up against the belly and head flexed.
❖ Area marked, area clean and draped, Local sedatives given
❖ Needle inserted into L3-L4 perpendicularly and needle directed upwards
❖ The needle passes through skin, supraspinous ligament, interspinous ligament, ligament flavum and finally the dura matter.
❖ Loss of resistance is felt as the needle pierces the dura.
❖ Stilette is the removed and then collect the sample of CSF in 3 bottles.
❖ CSF should always be allowed to come out of its own and should never be withdrawn by syringe suctioning.
❖ The needle is withdrawn and the site covered by antiseptic bandage.
❖ The patient is made to lie in head low position and analgesia may be given for low tension headache.</td></tr>
</table>

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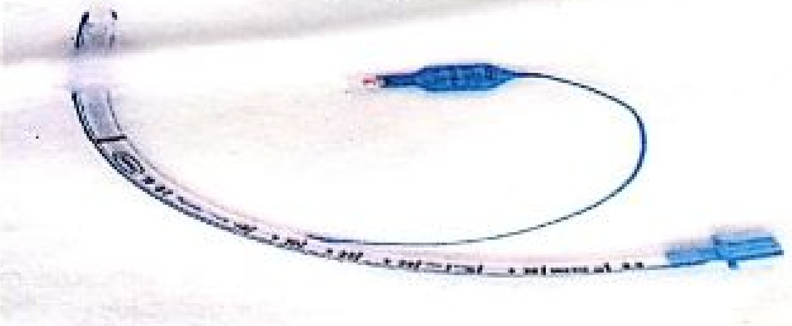
Nasogastric Tube (NG Tube)

Uses	Diagnostic	Therapeutic
	❖ To diagnose Internal bleeding in upper GI ❖ To diagnose TB (gastric lavage for AFB) ❖ To diagnose Trachea esophageal fistula ❖ To diagnose Poisoning (gastric aspirate for analysis) ❖ Localization of esophageal strictures ❖ Gastric analysis	❖ For feeding in comatose pt. ❖ Administration of drugs ❖ To remove gastric content e.g. in poisoning, persistent GI bleed, abdominal distention with bilious emesis, hepatic encephalopathy ❖ Acute Intestinal obstruction ❖ Gastric lavage in poisoning
Contraindications	❖ Head trauma ❖ Coagulopathy ❖ Kerosene poisoning ❖ Corrosive poisoning	
Complications	❖ Trauma to nose and pharynx ❖ Aspiration pneumonia ❖ Irritation ❖ Infection ❖ Placement of tube in trachea	

Endotracheal Tube (ETT)



Uses	❖ To secure airway ❖ For intermittent positive pressure ventilation ❖ During resuscitation ❖ Suctioning of trachea in meconium aspiration ❖ Administration of Medication
Contraindications	❖ Laryngeal trauma ❖ Obstructed airway
Complications	❖ Trauma to local structures ❖ Blockage of tube ❖ Prolonged intubation causes laryngeal necrosis ❖ Tracheal narrowing and fibrosis ❖ Migration of tube out of trachea

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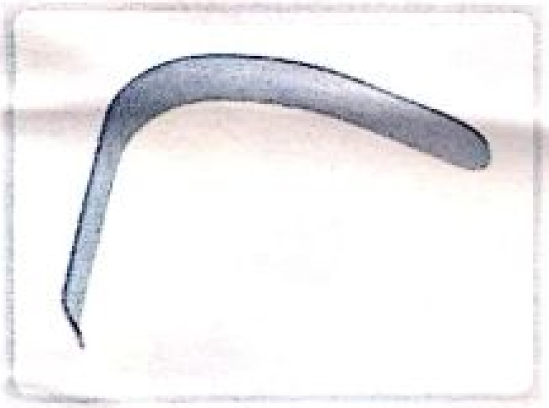
Ambu bag (Bag and Mask ventilation)

Uses	❖ Respiratory failure/arrest ❖ Neonatal resuscitation
Contraindications	❖ Diaphragmatic hernia ❖ Thick meconium stained liquor ❖ Foreign material in airway ❖ Complete airway obstruction
Complications	❖ Hypo/hyper ventilation ❖ Inflated air in stomach ❖ Lung aspiration ❖ Air embolism

Tongue Depressor



Uses	❖ Examine Throat, Oral Cavity, tonsil, palatal movement, posterior pharynx, Uvula. ❖ Visualize foreign body if aspirated ❖ Open mouth in a unconscious patient , suctioning

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Laryngoscope

Uses	❖ Asphyxia ❖ Meconium aspiration ❖ Respiratory distress syndrome ❖ Tracheo-esophageal fistula ❖ Resuscitation ❖ GA drug administration
Contraindications	❖ Cervical trauma/ disease ❖ Respiratory obstruction
Complications	❖ Tracheal tube displacement ❖ Tracheal tube obstruction ❖ Pneumothorax

Inhaler and Inhaler with Spacer

Inhaler Uses	❖ An inhaler (puffer or pump) is a medical device used for delivering medica into the body via the lungs. ❖ It is mainly used in the treatment of asthma and chronic obstructive pulmon disease. ❖ Zanamivir, used to treat influenza, must be administered via inhaler.
Spacer Uses	❖ Spacers are used to improve drug deposition to the lungs in patients who cannot master their aerosol inhaler technique. ❖ They are useful in reducing side effects of high dose inhaled corticosteroid reducing the amount of drug deposited in the mouth

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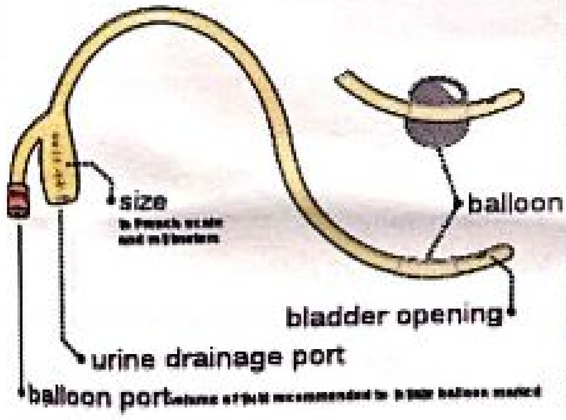
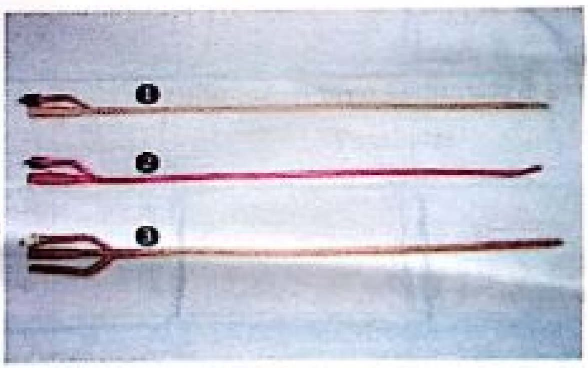
Oropharyngeal Airway (Guedel Airway)

Indications	❖ To open/ maintain airway ❖ Assist in oropharyngeal suctioning
Contraindications	❖ Intact gag reflex ❖ Foreign body in airway ❖ Nasal fracture or active bleed
Complications	❖ Vomiting leading to Aspiration ❖ Cause or worsen airway obstruction ❖ Damage to dental structures

Foleys Catheter





Uses	**Diagnostic**	**Therapeutic**
	❖ Collection of uncontaminated urine specimen ❖ Monitoring of urine output	❖ To relieve Acute urinary retention & obstruction ❖ Initiation of continuous bladder irrigation ❖ Hygienic care of bedridden patients
Contraindications	❖ Traumatic injury to lower urinary tract	
Complications	❖ Infections ❖ Urethral strictures ❖ Urethral perforation ❖ Bleeding	

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Accuhaler

What is this instrument?	❖ Accuhaler
Name two conditions where this device is used?	❖ Asthma and COPD
Name some important drugs delivered through this?	❖ Salmeterol ❖ fluticasone ❖ Salmeterol and fluticasone
What are advantages over metered dose inhalers?	❖ The device is easier to use than conventional metered dose inhalers ❖ A numerical dose encounter helps monitor the asthma therapy ❖ More environment friendly
What are disadvantages?	❖ It may be difficult to use for young children's ... adults who are short of breath

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Central Venous Catheter

Introduction & consent	❖ Take informed consent ❖ Explain procedure and complications
Procedure	❖ Position patient head down and towards left side ❖ Wash hands ❖ Wear gloves ❖ Sterilize the area ❖ Give inj. Lignocaine cutaneously and subcutaneously around IJV ❖ Flush all lumens and lines and clamp all lines ❖ Insert syringe into IJV ❖ Insert the wire ❖ Remove the needle ❖ Use scalpel to make small incision into the skin ❖ Pass the dilator and wire ❖ Remove the dilator and pass CVP line ❖ Aspirate and flush all lumens ❖ Suture and dressing
Indications	❖ IV access ❖ Infusion of irritant substances ❖ CVP monitoring ❖ Inadequate peripheral access ❖ Transvenous pacing
Contraindications	❖ Obstructed vein (e.g. clot) ❖ Stenosis of the vein ❖ Severe coagulopathy ❖ Contaminated site or burned site ❖ Uncooperative awake patient

Complications

Immediate	Early	Late
Failure of procedure Pneumothorax Arterial puncture Local hematoma Guidewire-induced arrhythmia	Catheter blockage Chylothorax	Infection Vascular erosion Vessel stenosis Thrombosis

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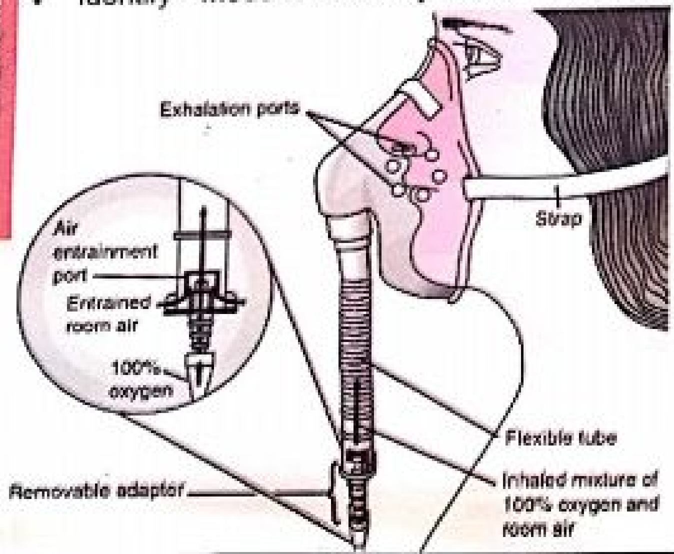
Venturi Mask and Venturi Mask Valves

- Identify---Mode for Delivery of O2---Specific Use of Venturi



Mode of delivery of O2	- Provides a precise percentage of O2 (FiO2) at high flow rates.
	  ○ Colour codes: (Mnemonic: Boys Want Young Rowdy Girls)
	  ○ 24% BLUE, 28% WHITE, 35% YELLOW, 40% RED, 60% GREEN---orange 31%

Advantages	- Fine control of fio2 - Doesn't dry mucous membrane - Suitable for chronic co2 retention
Specific use	- Used in COPD patients/Co2 retention patients

Nasal Canula/Prongs

Indications	- Low to moderate oxygen requirement - No or Mild respiratory distress - Lon term oxygen therapy
Contraindications	- Poor Efforts, apnea, severe hypoxia, mouth breathing
Advantages	- Less expensive - Comfortable - Well tolerated - Able to talk and eat
Disadvantages	- Doesn't deliver high FiO2, - Irritation of nose

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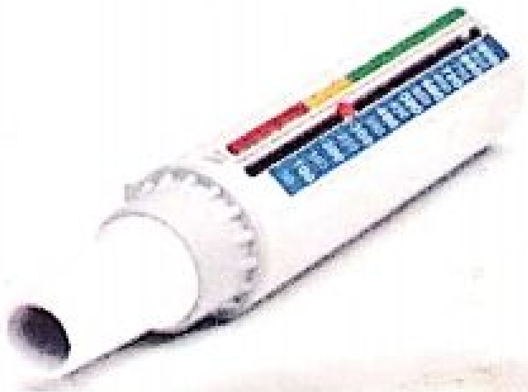
Peak flow meter



Identify	❖ Peak flow meter
How does it work	❖ A peak flow meter is a tool that measures the peak expiratory flow rate (PEFR). The PEFR is the amount of air a person can quickly force out of their lungs in one breath.
Uses	❖ Monitor the progress of disease and its treatment in bronchial asthma and COPD
How to use	❖ Make sure that the indicator or pointer is set to zero. ❖ Take a deep breath. ❖ Put the flow meter in the mouth, close the lips around the mouthpiece. ❖ Blow out hard and fast. The indicator will move in response to the exhalation. ❖ Move the indicator back to zero and repeat twice more. ❖ Record the best of the three attempts in a chart or notebook. ❖ Measure the peak flow at the same time each day for a few weeks to determine personal best.
Peak flow zone	❖ Green---- 80–100% of personal best number---Good control ❖ Yellow---- 50–80% of personal best number----- asthma action plan + Fast acting inhaler ❖ Red------- Less than 50% of personal best number---Medical emergency—Fast acting Inhaler

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Instruments

Bone Marrow Aspiration Needle

Site	❖ >1year: at iliac crest ❖ <1 year: Proximal tibia medial to tibial tuberosity
***Identification* point**	❖ A Stillete ❖ A thick body with nail ❖ The needle consists of a guard 2cm from the tip
Uses	**Diagnostic:** ❖ Aplastic anemia ❖ Leukemia ❖ Megaloblastic anemia ❖ CLL/CML ❖ PUO **Therapeutic:** ❖ Bone marrow transplantation
Contraindications	❖ Bleeding disorder ❖ DIC ❖ Concomitant use of anticoagulants ❖ Infection at the site ❖ Recent radiation at the site ❖ Sternal biopsy in patients with osteoporosis or multiple myeloma
Complications	❖ Soreness at site (common) ❖ Pain at the site ❖ Hemorrhage ❖ Infection ❖ Retroperitoneal hematoma ❖ Trauma to neighboring structures and tissue ❖ In sternal approach: cardiac tamponade
Causes of dry or bloody tap tap	❖ Faulty technique ❖ Myelofibrosis ❖ Hairy cell leukemia ❖ Malignancy infiltration
Indications for trephine biopsy	❖ Dry or bloody tap (all causes of it) ❖ If bone marrow aspiration fails to establish a diagnosis ❖ Diagnosis and staging of lymphoma

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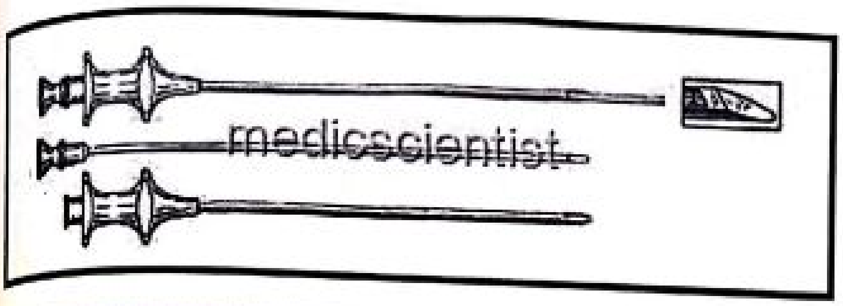
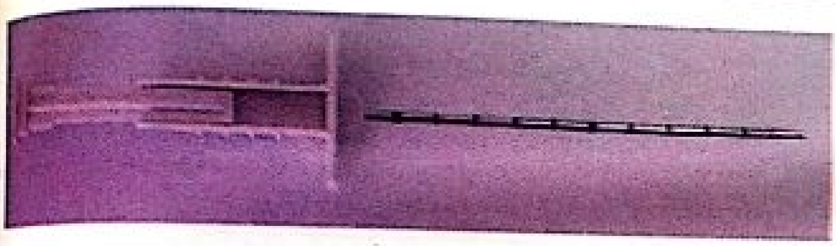
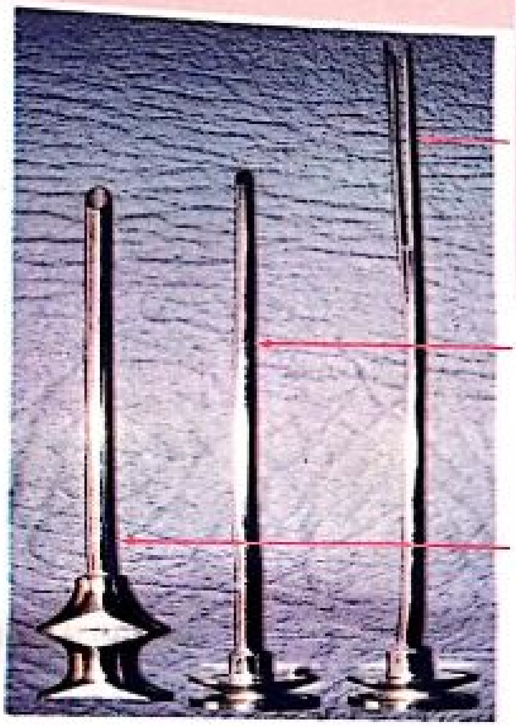
Liver Biopsy Needle

Types

1. Suction needles (Menghini needle)
2. Cutting needles (Vim-Silverman's needle, Tru-cut needle)







Indications	❖ Chronic liver disease (cirrhosis of liver, chronic hepatitis) ❖ Space occupying lesions ✓ Hepatic carcinoma ✓ Secondary deposits in liver ❖ Metabolic disorders ✓ Wilsons disease ✓ Hemochromatosis ❖ Infiltrative diseases ✓ Sarcoidosis ✓ lymphoma ❖ Amyloidosis ❖ Glycogen storage diseases ❖ Unexplained hepatomegaly
Contraindications	❖ Bleeding disorders e.g. hemophilia, Christmas disease ❖ Hydatid cyst ❖ Passive venous congestion of liver ❖ biliary obstruction ❖ Severe jaundice ❖ Hepatic encephalopathy ❖ Platelets <100000 ❖ Uncooperative patient
Technique	❖ Position: ✓ After taking the consent & informing the patient about procedure & its complications, the Patient is asked to lie on left lateral side with his right arm kept across his chest. ❖ Site: ✓ The site of prick is selected in mid or ant axillary line 1 or 2 ICSs below the upper level of liver dullness. This usually corresponds to 9th or 10th ICS. ❖ Procedure ✓ After cleaning and draping the area, local anesthesia is given into the skin, subcutaneous tissue and deep into the parietal pleural. ✓ The needle is then introduced at the site as described above but always close to the upper border of lower rib in that ICS, to avoid injury to NVB.

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	✓ As the needle is in liver parenchyma, the patient is asked to take few de breaths to confirm its positioning. If in right place the needle will move wi breathing. ✓ The patient is then asked to hold his breath in expiration. The final step o taking biopsy varies with different type of needles used. Biopsy material i preserved in 10% formol saline. ✓ The biopsy site is then sealed and bandage applied. ❖ Post-Operative Care ✓ Rest for 12-24 hours. ✓ Vitals monitoring to timely detect any complication like internal bleeding
Complications	❖ Pain ❖ Bleeding ❖ Infection ❖ Biliary peritonitis ❖ Hematoma ❖ Colonic injury ❖ Renal damage ❖ Pneumothorax ❖ Hemothorax
Indications for Trans Juglar Biopsy	❖ Coagulation defect ❖ Massive ascites ❖ Small liver ❖ Sever obesity ❖ Acute liver failure (pre transplant)

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RENAL BIOPSY

Needles	❖ Vim Silverman's biopsy needle ❖ Menghini's aspiration biopsy needle ❖ Travenol Tru-cut biopsy needle ❖ Necker hospital biopsy needle
Indications	❖ Nephritic syndrome ❖ Nephritic syn ❖ Acute renal failure ❖ Unexplained persistent proteinuria ❖ Renal transplant to look for rejection ❖ Persistent hematuria ❖ Renal mass ❖ Unexplained CKD ❖ Familial renal disease
Contraindications	❖ Uncontrolled bleeding diathesis ❖ Uncontrolled HTN ❖ Active renal/peri renal infection ❖ Skin infection at biopsy site ❖ Small kidney ❖ Hydronephrosis ❖ Solitary kidney (exception: transplanted kidney) ❖ Uncooperative patient. ❖ Pregnancy ❖ Severe anemia
Technique	❖ Consent, pre-requites, informing about procedure and complications ❖ Position: ✓ The patient is made to lie on his belly with a pad under his abdomen to raise the loin. ❖ Site: ✓ The point of puncture is chosen on a line connecting the anterior free end of 11th rib with 2nd lumbar vertebrae. ✓ The line crosses the lower pole of the kidney. ✓ Right kidney is preferred for biopsy as it lies lower and has lesser chances of injury to great vessels or spleen on left side ❖ Procedure: ✓ The site is cleaned and draped. ✓ Local infiltration anesthesia is given. ✓ The needle is introduced from the point as mentioned above. ✓ Movement of needle with breathing guides the correct position (limited movement with breathing if in muscles and swaying in a wide arc when in kidneys. Further maneuvers depend on type of instrument used. ✓ After the procedure the patient is asked to lie on his back for 12-18 hours. Ask him to drink a lot of water to induce dieresis.
Complications	❖ Retroperitoneal hemorrhage ❖ Hematuria ❖ Lion pain ❖ Damage to ilioinguinal nerve ❖ Infection ❖ Adjacent organ damage

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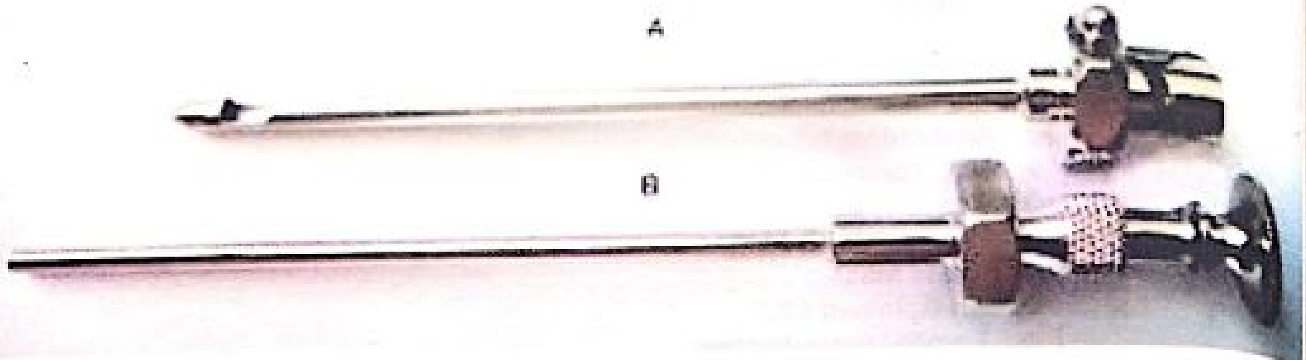
Pleural Biopsy Needle



Indications	Malignant pleural effusion Tuberculous pleural effusion Pleural effusion of unknown etiology
Contraindications	Coagulopathy Local skin infection Empyema (relative)
Complications	Pneumothorax in about 1% cases Bleeding Broncho-pleural fistula Injury to adjacent organs like liver, spleen, kidney
Technique	❖ Consent, pre-requites, informing about procedure and complications ❖ Position: ✓ Patient is asked to sit on a stool and lean forward with his arms resting on a table in front of him. ✓ IF patient can't sit→ lying laterally on side of pleural effusion, with has back near the edge of the bed and head end of the bed to be maximally elevated. ❖ Site: ✓ Ideally the site should be one ICS below the level where percussion note gets stony dull or breath sounds and vocal resonance are absent. The usual site turns out to be 7th-9th ICS along the scapular or posterior axillary line ❖ Procedure: ✓ The site is cleaned and draped. ✓ Local infiltration anesthesia is given. ✓ The needle is introduced after giving a small incision. ✓ stylet is removed and pleural fluid is aspirated ✓ then the cutting trocar is introduced and parietal pleura is cut ✓ needle is then removed, reopened and specimen sent for histopathology

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Station Emergencies, Poisoning & Animal Bites

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Acute Severe Asthma

Differential Diagnosis:

- Acute infective exacerbation of COPD
- Pulmonary edema,
- Upper respiratory tract obstruction

Treatment

- **Immediate treatment**
  - Salbutamol 5mg (or terbutaline 10mg) nebulized with O2
  - Hydrocortisone 100mg IV or prednisolone 40–50mg PO or both if very ill
  - Start O2 if saturations <92% (also check ABG), aim sats 94–98%
- **If life-threatening features present: (Silent, drowsy, confused)**
  - Inform ICU and seniors
  - Give salbutamol nebulizers every 15min, or 10mg continuously per hour.
  - Monitor ECG; watch for arrhythmias
  - Add in ipratropium 0.5mg to nebulizers
  - Give single dose of magnesium sulfate (MgSO4) 1.2–2g IV over 20min
- **If improving within 15–30 minutes:**
  - Nebulized salbutamol every 4 hours
  - Prednisolone 40–50mg PO OD for 5–7 days
  - Monitor peak flow and O2 sats aim 94–98% with supplemental if needed
- **If not improving:**
  - Refer to ICU for consideration of ventilatory support and intensification of medical therapy, e aminophylline,
  - IV salbutamol if any of the following signs are present:
    - Deteriorating PEF, Persistent/worsening hypoxia
    - ABG showing low pH or high H+
    - Exhaustion, Drowsiness, confusion, Respiratory arrest

Criteria for admission & discharge

- On presentation---nebulized SABA + steroids
- Assess and decide within 4 hours

Good response (FEV1 or PEF≥ 70%)	❖ Discharge home---continue SABA + inhaled Corticosteroids ❖ Review medication, inhaler technique and advise a close follow up
Incomplete response (FEV1 or PEF 40- 69%)	❖ Admit in hospital ward ❖ SABA + inhaled or IV Corticosteroids ❖ Consider adjuvant therapies
Poor response (FEV1 or PEF ≤40%)	❖ Admit in ICU ❖ Inhaled SABA hourly or continuously + IV Corticosteroids ❖ Consider adjuvant therapies ❖ Possible mechanical ventilation or intubation

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Acute Exacerbations of COPD

Definition	❖ Sustained (>48 h) worsening of dyspnea, cough, or sputum production leading to an increased use of medications
Etiology	❖ Viral URTI, bacteria, air pollution, CHF, PE, MI must be considered
Investigations	❖ Arterial blood gases ❖ CXR to exclude pneumothorax and infection. ❖ BC; U&E; CRP. Theophylline level if patient on therapy at home. ❖ ECG. ❖ Send sputum for culture if purulent. ❖ Blood cultures if pyrexial.
Management	**Nebulized bronchodilators** Salbutamol 5mg/4h and ipratropium 500μg/6h **Investigate:** CXR, ABG ↓ **Controlled oxygen therapy if S_aO_2 <88% or P_aO_2 <7 kPa** Start at 24-28%, aim sats 88-92% (94-98% if no hypercapnia on ABG) .djust according to ABG, aim P_aO_2 >8.0kPa with a rise in P_aCO_2 <1.5kPa ↓ **Steroids** IV hydrocortisone 200mg and oral prednisolone 30mg OD (continue for 7-14d) ↓ **Antibiotics** Use if evidence of infection, eg amoxicillin 500mg/8h PO, alternatively clarithromycin or doxycycline (p381) ↓ Physiotherapy to aid sputum expectoration ↓ **If no response to nebulizers and steroids:** Consider IV aminophylline[1] ↓ **If no response** 1 Consider non-invasive positive pressure ventilation[2] (NIPPV) if respiratory rate >30 or pH <7.35, or P_aCO_2 rising despite best medical treatment ↓ 2 Consider intubation and ventilation if pH <7.26 and P_aCO_2 is rising despite non-invasive ventilation ↓ 3 Consider a respiratory stimulant drug, eg doxapram 1.5-4mg/min IV. SE: *agitation, confusion, tachycardia, nausea*. In patients who are not suitable for mechanical ventilation. It is a short-term measure, used only if NIV is not available

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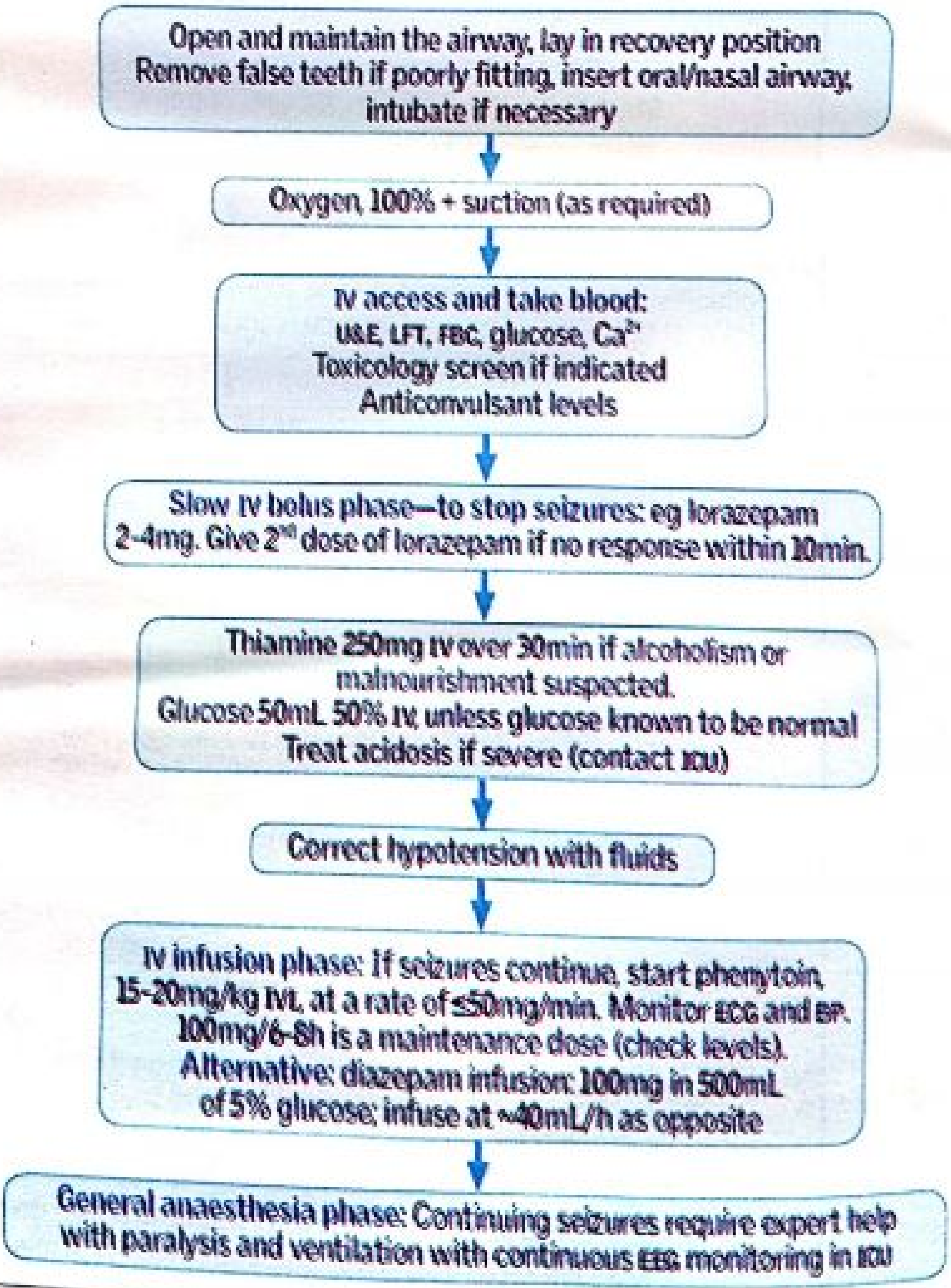
Status Epilepticus

Definition	❖ It is defined as a continuous seizure lasting for at least 30 minutes, 1 or two or more discrete seizures, between which the patient does not recover consciousness.
Etiology	❖ Idiopathic (no previous CNS insult) ❖ Sudden withdrawal of anti-epileptic drugs (most common cause) ❖ Initial presentation of epilepsy ❖ Sleep deprivation in epileptic patient. ❖ Intercurrent illness ❖ Sever anoxic encephalopathy ❖ Electrolyte abnormality
Investigations	❖ Bedside glucose ❖ The following tests can be done once treatment has started: o Lab glucose, ABG, U&E, Ca2+, FBC, ECG. o Consider anticonvulsant levels, toxicology screen, LP, culture blood and urine, EE
Management	

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Diabetic Ketoacidosis

A 19-year-old woman was suffering from high grade fever, productive cough, shortness of breath, diffuse abdominal pain and vomiting. She is emaciated and dehydrated. Investigation reveals

- Blood glucose: 28mmol/L, serum Na: 118, Serum K+: 4.7mmol/L bicarbonate 8.1 mmol/L, serum creatinine 1.1 mg/dL

What is your likely diagnosis: Diabetic ketoacidosis

✓ Hint: High blood sugar + dehydration with severe metabolic acidosis indicates DKA

Typical Picture	❖ Gradual drowsiness, vomiting and dehydration in type 1 diabetic (very rarely type 2) ❖ Polyuria, polydipsia, lethargy, anorexia, ketotic breath, dehydration, coma, or deep breathing (sighing 'Kussmaul' hyperventilation)
Triggers	❖ Infection (e.g. UTI), surgery, MI, pancreatitis, chemotherapy, wrong insulin dose/non-compliance.
Diagnosis	❖ Acidemia (blood pH <7.3 or HCO3 <15 mmol/L ❖ Hyperglycemia ❖ Ketonemia (Ketones > 3mmol/L in blood---or more than 2+ on urine dipstick)
Investigations	❖ CBC, ABGs, ECG, CXR. ❖ U&E, Glucose ❖ Ketones (Always check venous blood ketones) ❖ Blood culture (if evidence or suspicion of infection) ❖ Anion gap (Anion gap = Na+ − (Cl− + HCO3-) ---Anion gap >12 indicates DKA
Complications	❖ Hypokalemia, Hypomagnesaemia, Hypophosphatemia ❖ Cerebral edema (get help if sudden CNS decline) ❖ Aspiration pneumonia.
Treatment	❖ Monitor Airway, breathing and Circulation, 2 large-bore cannulas ❖ If SBP <90mmHg give 500mL bolus saline, if no response give a second bolus and get ICU advice. If SBP >90 or response to first bolus, start fluids as below. ❖ Aim for urine output 0.5mL/Kg/Hour

Administer intravenous fluids	Administer short acting/Regular insulin
2-3 Litre of Normal saline over 1-3 hours ↓ When RBS <250 mg/dL switch to Dextrose Saline infusion ↓ Keep RBS between 250- 300mg/dL	0.1 units/Kg---IV bolus ↓ 0.1 units/Kg/H---IV infusion in 100mL N/S ✓ Check Blood glucose + Ketones Hourly ✓ Overlap IV insulin with subcutaneous insulin for 1-2 hour after resolution of DKA

Check Serum K+ Level

✓ Add K+ in 2nd bag depending on the deficit and then replaced accordingly
✓ Formula for K+ deficient= (3.5-calculated K+) × Body weight in KG × 0.4

✓ Continue until ketones < 0.6 mmol/L, pH > 7.3 and venous bicarb >18mmol/L.
✓ For Fluid replacement
  - Typical fluid deficit is 100mL/kg, so for an average 70kg man = 7 litres.
  - Give 1L in 1st hour, 1L over 2 hours, 1L over 2 hours, 1L over 4 hours, 1L over 6 hours. Always reassess at 12 hours.
  - Be more cautious with fluids if young adult, elderly, pregnant, comorbidities.
  - Bicarbonate may increase risk of cerebral edema and is not recommended---until or unless pH < 6.9

✓ Find and treat infection/cause for DKA.
✓ Hyperglycemia causes a hypercoagulable state: DVT or PE may occur. Administer prophylactic anticoagulation with LMWH in DKA or hyperosmolar states.

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Hyperglycemic hyperosmolar non-ketotic (HONK) coma

- A 70-year-old lady was suffering from fever and frequency of micturition for 10 days. She became unconscious for the last 2 hours. BP 90/60 mmHg, Pulse 110/min, marked dehydration, investigation reveals
  - HB 11.2 g/dL, WBCs 17000, polymorphs 85%, lymphocytes 15%. Platelets 210,000
  - Serum Na: 162 mmol/L, chloride 110 mmol/L, Potassium 4.6 mmol/L, Bicarbonate 22 mmol/L, serum Creatinine 1.4 mg/Dl
  - Urine R/E: Plenty of puss cells, albumin (++), Glucose (+++).
  - CT Brain: Age related brain atrophy
- **What is your likely diagnosis:** Hyperosmolar nonketotic diabetic coma with UTI
  - ✓ Hint: Common in old age + High glucose + High plasma osmolality and no ketones as insulin deficiency is partial and low insulin is present

Typical Picture	❖ is caused by intercurrent illness, inadequate diabetic therapy and dehydration. ❖ It develops over days/weeks, and is more common in the elderly. ❖ HHS is characterized by ↑ glucose levels, ↑ blood osmolality, and a lack of urinary ketones.
Diagnosis	❖ Hyperglycemia (> 35mmol/L or >630mg/dL) ❖ Altered mental status ❖ Serum osmolarity > 320 mOsm/L (Normal 270-290 mOsm/L) ❖ Lack of urinary Ketones
Investigations	❖ CBC, ABGs, ECG, CXR. ❖ U&E, Glucose ❖ Ketones (Always check venous blood ketones) ❖ Blood culture (if evidence or suspicion of infection) ❖ **Serum osmolality = 2 × Measured Na +** $\frac{\text{Glucose}}{18} + \frac{\text{BUN}}{2.8}$
Treatment	❖ Monitor Airway, breathing and Circulation, 2 large-bore cannulas ❖ Aim for urine output 0.5mL/Kg/Hour

Administer intravenous fluids	**Administer short acting/Regular insulin**
2-3 Litre of Normal saline over 1-3 hours ↓ When RBS <250 mg/dL switch to Dextrose Saline infusion ↓ Keep RBS between 250- 300mg/dL	0.1 units/Kg---IV bolus ↓ 0.1 units/Kg/H---IV infusion in 100mL N/S ✓ Check Blood glucose Hourly

Check Serum K+ Level

- ✓ Add K+ in 2nd bag depending on the deficit and then replaced accordingly
- ✓ Formula for K+ deficient= (3.5-calculated K+) × Body weight in KG × 0.4
- ✓ Patients have adequate insulin present to prevent ketoacidosis.

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Thyroid Storm/ Hyperthyroid crisis

Introduction	❖ Life-threatening condition, associated with untreated or undertreated hyperthyroidism and significantly worsens in the setting of acute stress such as infection, trauma, and surgery
Signs and symptoms	❖ Presents with tachycardia (>140 bpm), agitation, restlessness, fever, diarrhea, coma, and tachyarrhythmia (cause of death).
Management	IV access, fluids if dehydrated. NG tube if vomiting. ↓ Take blood for: T3, T4, TSH, cultures (if infection suspected). ↓ Sedate if necessary (eg chlorpromazine 50mg PO/IM). Monitor BP. ↓ If no contraindication, and cardiac output OK, give propranolol 40mg/8h PO; max IV dose: 1mg over 1min; may need repeating. In asthma/poor cardiac output, propranolol has caused cardiac arrest in thyroid storm, so ultra-short-acting β-blockers have a role, eg IV esmolol. Consider diltiazem if β-blockers contraindicated. ►Get help. ↓ High-dose digoxin may be needed to slow the heart, but ensure adequately β blocked, give with cardiac monitoring. ↓ Antithyroid drugs: carbimazole 15-25mg/6h PO (or via NGT); after 4h give Lugol's solution (aqueous iodine oral solution) 0.3mL/8h PO well diluted in water for 7-10 days to block thyroid. ↓ Hydrocortisone 100mg/6h IV or dexamethasone 4mg/8h PO to prevent peripheral conversion T4 to T3. ↓ Treat suspected infection, eg with co-amoxiclav 1.2g/8h IVI. ↓ Adjust IV fluids as necessary; cool with tepid sponging ± paracetamol. ↓ *Continuing treatment:* After 5d reduce carbimazole to 15mg/8h PO. After 10d stop propranolol and iodine. Adjust carbimazole (p210).

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Addisonian Crisis

- A 40-year-old lady presented in OPD with history of generalized weakness, low grade fever and easy fatigability of 4 years. She also reports of decrease in appetite, significant loss of weight with constant nausea over the past 16 months. She also insists that her skin color was fair which have recently changed to black over the body sparing hands and feet. Her past family history is insignificant.
  - Vital signs temperature 99 F, pulse 88/min. BP 85/50 mmHg, respiratory rate 22/min.
  - Dark brown pigmentation is present all over the body, especially over the elbows and skin creases. Rest of the clinical examination is normal.

- **What is the most likely diagnosis?** Adrenal insufficiency.
- **How would you investigate?**
- **Explain how would you manage such a case?**

✓ Hint: Low BP + Dark pigmentation of skin (esp. palmar crease)—suggests Primary adrenal insufficiency (Addison's)

- **A 22-year-old male was admitted with complaints of weakness and weight loss for several weeks. His blood pressure is 80/50 mmHg. Investigation reveals**
  - Na: 122, K: 6.3, HCO3: 30mmol/L

- **What is your likely diagnosis?** Addison's disease
- **Mention one important clinical sign:** Pigmentation of skin and mucous membrane

✓ Hint: Low sodium, high potassium and low BP plus skin pigmentation is highly suggestive of Addison's disease

Addison's Disease	❖ Causes: ○ Idiopathic (most common in developed countries) ○ Infections e.g. tuberculosis (most common cause overall) ○ Metastatic tumor ○ Various infections (e.g. HIV) ❖ Characteristics ○ **Postural Hypotension** ○ **Increased pigmentation of skin (especially palmar crease)** ○ Serum Na, Cl-, glucose, and HCO_3→ decreased ○ **Serum potassium→ increased**
Addisonian Crisis	❖ Causes ○ Infection, trauma, surgery, missed medication. ❖ Characteristics ○ Shock (tachycardia, peripheral vasoconstriction, severe postural hypotension occasionally with syncope, oliguria, profound muscle weakness, confusion, altered consciousness leading to coma) ○ **Hyperkalemia, hyponatremia, hypoglycemia.**
Management of Addisonian Crisis	❖ If suspected, treat before biochemical results. ❖ Bloods for cortisol and ACTH. ❖ U&ES—can have high K+ (check ECG and give calcium gluconate if needed) and low Na+ (salt depletion, should resolve with rehydration and steroids). ❖ Hydrocortisone 100mg IV stat then 8 hourly ❖ IV fluid bolus, crystalloid or colloid to support BP. ❖ Monitor blood glucose: the danger is hypoglycemia. ❖ Blood, urine, sputum for culture, then antibiotics if concern about infection ❖ Change to oral steroids after 72h if patient's condition good.

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Myxedema coma

Introduction	❖ The ultimate hypothyroid state before death
Signs and symptoms	❖ Looks hypothyroid often >65yrs ❖ Hypothermia, hyporeflexia, hypoglycemia, bradycardia, coma & seizures. ❖ May have had radioiodine, thyroidectomy, or pituitary surgery
Triggers	❖ Infection, MI, stroke, or trauma
Investigations	❖ CBC ❖ U&E (Na+ often ↓) ❖ Glucose ❖ T3, T4, TSH ❖ Blood for cultures & cortisol
Treatment	❖ Correct any hypoglycemia. ❖ Give T3 (liothyronine) 5–20μg/12h IV slowly. Be cautious: you may precipitate manifestations of ischemic heart disease. Alternative regimens involve levothyroxine. ❖ Give hydrocortisone 100mg/8h IV—vital if pituitary hypothyroidism is suspected (i.e. no goitre, no previous radioiodine, and no previous thyroid surgery). ❖ If infection suspected, give antibiotic, e.g. cefuroxime 1.5g/8h IV. ❖ Caution with fluid, rehydrate as needed but watch for cardiac dysfunction ❖ BP may not respond to fluid and inotropes may be needed. ❖ Active warming (blankets, fluids) may be needed for hypothermia. ❖ T3 5–20μg/4–12h IV until sustained improvement (~2–3d) then levothyroxine 50μg/24h PO.
Complications	❖ Hypoglycemia ❖ Pancreatitis ❖ Arrhythmias

Anaphylaxis

Introduction	❖ Type-1 IgE medicated reaction due to ○ Drugs and vaccines (eg antibiotics, streptokinase, aspirin, NSAIDs, IV contrast agents. ○ Bee/wasp stings. ○ Foods (nuts, shellfish, strawberries, wheat). ○ Latex.
Clinical Features	❖ **Respiratory** ○ Upper airway occlusion----Swelling of lips, tongue, pharynx, and epiglottis ○ Lower airway occlusion----dyspnea, wheeze, chest tightness, hypoxia ❖ **Skin** ○ Pruritus, erythema, urticarial, and angioedema. ❖ **Cardiovascular** ○ Hypotension, shock and Arrhythmias ❖ **GI tract** ○ Nausea, vomiting, diarrhea, abdominal cramps.
Management	❖ Maintain airway, breathing and circulation ❖ Maintain double IV line ❖ Inj. Epinephrine 0.5mg IM-----repeat every 5 mins as needed ❖ Chlorphenamine 10mg IV + Hydrocortisone 200mg IV ❖ I/V fluids N/saline 500mL over 15 mins then further infusion according to clinical state ❖ B2 -agonist (e.g. salbutamol 5mg) nebulized with O2 for bronchospasm, possibly with the addition of nebulized ipratropium bromide 500mcg. ❖ If profound shock judged immediately life-threatening give CPR/ALS if necessary

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Acute Kidney Injury

- 48 years old lady is admitted with a 4 days history of severe abdominal pain and vomiting, 12 hours after emergency operation for perforated gastric ulcer. She has passed no urine and catheterization yields only 40 ml of urine. B.P. 85/60 mmHg. Plasma urea 10.5 mmol/L urine sodium 10mmol/L, urine sodium 10 mmol/L, urine urea 140 mmol/L and urine osmolality 560 mmol/kg.

- What is the most likely diagnosis?
- Give an outline of management for this patient

✓ Hint: She has developed acute renal failure due to pre-renal azotemia. This might have happened due to hypotension secondary to hypovolemia or septicemia leading to hypotension. She has oliguria, raised plasma urea, low urine sodium and raised urine osmolality, all suggesting pre-renal element

- A 60-year-old male presents with fever, headache, dry cough, increased frequency of micturition and weakness for 10 days. Cefixime was given by a general practitioner. After 5 days the patient complains of scanty urine, puffiness of face, swelling of legs, polyarthralgia and multiple skin rashes. Investigation reveal:
  - Hb 10.9 g/dL, WBCS 11200, polymorphs 64%, lymphocytes 28%, eosinophils 8%, ESR 110 mm in 1st hour, platelets 175000.
  - Urine plenty of pus cells, 2+ proteinuria, total protein 1g/24 hour. Urea 19mmol/L (normal 2.5-6.6), creatinine 833 µmol/L (normal 60-120), potassium 6.1 mmol/L

- **What is your diagnosis?** Acute interstitial nephritis with Acute renal Failure due to cefixime
- **How would you manage this case?** Remove offending drug, prednisolone and Dialysis

✓ Hint: Skin Rash + renal impairment + antibiotic suggestive of interstitial nephritis 2ndry to hypersensitivity reaction

- **A 60-year-old male presents with loose motions for 3 days after consuming food at a restaurant. He is agitated and confused, blood investigation reveals creatinine 238 µmol/L**

- **What is your diagnosis?** Acute Renal failure secondary to hypovolemia
- **How would you manage this case?** Hydrate the patient, keep the patient euvolemic, avoid nephrotoxic drugs

✓ Hint: Increased creatinine after loose motion is suggestive of acute renal failure secondary to hypovolemia

Introduction

- Acute and reversible deterioration of renal function which develops over periods of days to weeks and measure by ↑ creatinine and ↑ BUN or by oliguria/anuria.
- **Causes**
  - Pre-Renal
    - Heart failure, Blood loss, Fluid loss, Renal artery stenosis or occlusion
  - Intrinsic renal
    - Acute tubular necrosis (sickle cell disease, NSAIDs, DM)
    - Interstitial nephritis (Antibiotics and NSAIDs)
    - Primary and secondary glomerulonephritis
  - Post- renal
    - Obstruction because of Stones, Tumors, Inflammation, Prostate enlargement

Comparison between Prenal, Intrinsic and Post Renal Causes Of ARF

- **Prerenal causes------in this kidneys hold on to sodium to preserve volume**

	Pre-Renal	Intrinsic	Post-Renal
Urine osmolality (mOsm/kg)	> 500	< 350	< 350
Urine Na+ (mEq/L)	< 20	> 40	> 40
FE_{Na}	< 1%	> 2%	< 1% (mild) > 2% (severe)
Serum BUN/Cr	> 20	< 15	Varies

Investigations

- Urgent ABG/VBG for K+
- ECG for hyperkalemic changes
- Bloods: U&ES, Ca2+, PO4, FBC, ESR, CRP, clotting, LFTS, protein electrophoresis, hepatitis serology, autoantibodies (ANCA, ANA, anti-GBM), complement, ASOT, rheumatoid factor.

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- Urine: dipstick, send for microscopy, culture, albumin/creatinine ratio

Management

- **General Measures**
  - Assess volume status
    - Look for Dec urine volume, non-visible JVP, poor tissue turgor
    - $\downarrow$BP, $\uparrow$pulse
  - Aim for euvolemia
    - 24-hour period aim to match input to loss (urine, vomit, diarrhoea, drains) + 500ml for insensible loss
    - Avoid K^+–containing fluids unless hypokalemic
  - Stop nephrotoxic drugs
    - E.g. NSAIDS, ACE inhibitor, gentamicin, amphotericin.
    - Stop metformin if creatinine is >150mmol/l
    - Check and adjust doses of renally excreted drugs
  - Nutrition is vital in the critically unwell patient:
    - Aim for normal calorie intake (More if catabolism $\uparrow\uparrow$, e.g. burns, sepsis) and protein ~0.5g/kg/d.

- **Treat Underlying cause**
  - Pre-renal:
    - Correct volume depletion with appropriate fluids, treat sepsis with antibiotics.
  - Post-renal:
    - Catheterize and consider CT of renal tract (CTKUB) and urology referral, if obstruction likely → discuss with urology regarding cystoscopy and retrograde stents or nephrostomy insertion;
  - Intrinsic renal:
    - Refer early to nephrology if concern over tubulointerstitial or glomerular pathology, any signs of systemic disease, multi-organ involvement (e.g. pulmonary-renal, hepatorenal syndromes) or indications for dialysis

- **Manage Complications**
  - Hyperkalemia
    - Withdrawal of potassium, Potassium containing foods and offending drugs
    - 10mL of 10% calcium gluconate
    - Intravenous insulin + glucose:
    - Salbutamol nebulizers
    - If venous bicarbonate low (i.e. patient is acidotic) giving IV sodium bicarbonate
  - Pulmonary edema (Mnemonic **LMNOP**)
    - **L**oop diuretics (e.g. Furosemide 80– 250mg IV either as IV over 1h or boluses titrated to response (larger doses are needed in renal failure)
    - **M**orphine 2.5mg (venous vasodilator, Decreases afterload)
    - **N**itrates (e.g. IV GTN)
    - **O**2 high-flow
    - **P**osition (sit the patient up—decreases pre-load)
    - If renal cause: ----If no response, hemodialysis or hemofiltration
    - If cardiac cause: ---Inotropic agents especially in hypotensive patients
  - Uremia
    - May require dialysis if severe or complications, e.g. encephalopathy, pericarditis.
  - Acidemia
    - May require dialysis
    - Consider sodium bicarbonate orally or IV if in HDU/ICU setting, discuss with nephrology before initiating

- **Renal Replacement Therapy**
  - Options in AKI include hemodialysis and hemofiltration
  - Both require large-bore venous access (e.g. internal jugular line).
  - Hemodialysis
    - Is usually done intermittently and allows good clearance of solutes in short periods but requires the patient to be hemodynamically stable.
    - If patients are stable enough for ward-based care this is usually the modality of choice.
  - Hemofiltration
    - Patients on the ICU are often filtered, as the fluid shifts are much less significant and therefore BP is less likely to drop.
    - However, filtration is much slower at clearing solutes, and is usually performed continuously while the patient is in established renal failure8

Indications for Urgent Dialysis

- Hyperkalemia unresponsive to medical treatment or in an oliguric patient
- Pulmonary edema unresponsive to medical treatment
- Uraemic complications such as pericarditis, encephalopathy
- Severe metabolic acidosis (pH <7.2 or base excess below –10)

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Benzodiazepine Poisoning

Introduction	❖ Includes diazepam, nitrazepam, and temazepam
Clinical Features	Mnemonic: **4D's** ❖ **D**rowsiness ❖ **D**izziness ❖ **D**ysarthria ❖ **D**epression (Respiratory Depression)
Management	❖ Clear the airway and maintain ventilation if necessary. ❖ Provide supportive care. ❖ Gastric lavage and activated charcoal are not indicated if only a benzodiazepine has been taken. ❖ Flumazenil (for respiratory arrest) ○ 200μg over 15s; then 100μg at 60s intervals if needed. ○ Usual dose range: 300–600μg IV over 3–6min (up to 1mg; 2mg if in ICU). ○ Side Effects: convulsions, cardiac arrhythmias & withdrawal symptoms ❖ Referral to psychiatrist

Opioid Poisoning

Introduction	❖ Includes Morphine, diamorphine (heroin), pethidine, codeine & nalbuphine etc. methadone, diphenoxylate, and related drugs. ❖ Acute opioid poisoning often occurs in addicts (who may have needle marks and thrombosed veins and a high risk of HIV and hepatitis).
Clinical Features	Mnemonic: **MORPHINE** ❖ **M**iosis (Pinpoint pupils/constricted pupil) ❖ **O**rthostatic hypotension ❖ **R**espiratory depression ❖ **P**hysical dependency ❖ **H**istamine release (bronchospasm) ❖ **I**ncreased ICP ❖ **N**ausea ❖ **E**uphoria
Management	❖ Clear the airway and maintain ventilation if necessary, maintain IV line ❖ Give naloxone, e.g. 0.4–2mg IV; repeat every 2min until breathing is adequate ❖ High-dose opiate misusers may need methadone (e.g. 10–30mg/12h PO) to combat withdrawal.

Organophosphate Poisoning

- **A 30-year-old farmer is brough to emergency department with nausea, vomiting, diarrhea, pin point pupils, fasciculation and unresponsive to deep pain. There is increased salivation and lacrimation**
- What is your likely diagnosis?

Introduction	❖ Organophosphates are widely used as insecticides. ❖ inhibit cholinesterases, causing accumulation of acetylcholine at nerve endings and neuromuscular junctions
Clinical Features	Mnemonic: **DUMBELS** ❖ **D**iaphoresis & Diarrhea ❖ **U**rination ❖ **M**iosis (constricted pupil) ❖ **B**ronchospasm ❖ **E**mesis ❖ **L**acrimation & ❖ **S**alivation
Management	❖ Clear the airway and maintain ventilation if necessary, maintain IV line ❖ Wear gloves; remove soiled clothes. Wash skin. ❖ Take blood (FBC and serum cholinesterase activity). ❖ Give atropine IV 2mg every 10min till full atropinization (skin dry, pulse >70 pupils dilated) ❖ Up to 3 days' treatment may be needed. ❖ Also give pralidoxime 30mg/kg IVI over 20min, then 8mg/kg/h, max 12g in 24h.

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Salicylate Poisoning

A 21-year-old unmarried girl is brought to the emergency department in coma. She is sweating, afebrile and tachypneic with fine crackles at the lung bases. She has generalized tonic clonic fit, which responded promptly to diazepam. Her Hb is 13.9 gm/dL, TLC 11×109/L, serum K+=3 mmol/L and serum bicarbonate 10mmol/L

- **What is the most likely diagnosis?** Salicylate poisoning
- **What are three other conditions you would consider in your differential diagnosis?**
  - DKA---acidosis in young patient should raise the suspicion
  - Poisoning with tricyclic antidepressants and amphetamines also shows metabolic acidosis
  - Uremic acidosis--; i.e. due to renal failure she has developed metabolic acidosis and encephalopathy.
- **What four investigations would you carry out?** —Given below
- **Name two treatment modalities for this patient?** Medical treatment and psychiatry assessment

✓ Hint: Young girl tachycardiac with fits/coma and metabolic acidosis—suggests salicylate poisoning

Introduction	❖ Uncoupling of oxidative phosphorylation leads to anaerobic metabolism and the production of lactate and heat. ❖ Effects are dose-related and potentially fatal: ○ 150mg/kg------mild toxicity ○ 250mg/kg------moderate ○ 500mg/kg------severe toxicity. ○ >700mg/L-------potentially fatal.
Clinical Features	Mnemonic: **ASPIRIN** ❖ **A**ltered mental status (Lethargy—coma) ❖ **S**weating/ diaphoresis ❖ **P**ulmonary edema ❖ **I**ncreased Vital signs (Inc Respiration, Inc Temp, Inc Heart rate) ❖ **R**inging in ears ❖ **I**rritable ❖ **N**ausea & Vomiting ❖ Patients present initially with respiratory alkalosis due to a direct stimulation of the central respiratory centers and then develop a metabolic acidosis
Management	❖ **General Measures** ○ Correct dehydration. ○ Keep patient on ECG monitor. ○ Consider gastric lavage if a patient has ingested > 500mg/kg body weight in the previous 1hr ○ Give activated charcoal 50g to all presenting ≤1h—consider even if delayed presentation----Consider repeat doses (2 further doses of 50g, 4h apart). ❖ **Investigations:** ○ Paracetamol and salicylate level ○ Glucose, U&E, LFT, INR, ABG, HCO3, CBC. ○ Salicylate level may need to be repeated after 2h, due to continuing absorption ○ Monitor blood glucose 1–2hrly, beware hypoglycemia ❖ **Correct acidosis:** ○ If plasma salicylate level >500mg/L (3.6mmol/L) or severe metabolic acidosis, consider alkalinization of the urine, e.g. with 1.5L 1.26% sodium bicarbonate IV over 3h. ○ Aim for urine pH 7.5–8. ❖ **Note:** ○ Monitor serum K+ as hypokalemia may occur, and should be treated (caution if acute kidney injury—AKI). ❖ **Dialysis** ○ May well be needed if salicylate level >700mg/L, and if AKI or heart failure, pulmonary or cerebral edema, confusion or seizures

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Paracetamol Poisoning

Introduction	❖ 150mg/kg or 12g in adults may be fatal (75mg/kg if malnourished). ❖ However, prompt treatment can prevent liver failure and death. ❖ 1 tablet of paracetamol = 500mg.
Clinical Features	❖ None initially, or vomiting ± RUQ pain. ❖ Later: jaundice and encephalopathy from liver damage (the main danger) ± acute kidney injury.
Management	❖ **General Measures** o Consider gastric lavage if a patient presents in <4h. o Activated charcoal 1g/kg (max 50g) is the treatment of choice, reducing serum levels more than gastric lavage and limiting liver injury ❖ **Investigations:** o Glucose, U&E, LFT, INR, ABG, CBC, HCO3 o Blood paracetamol level at 4h post-ingestion. ✓ **LFTs are normal until > 18hr after the overdose. The most sensitive lab evidence of liver damage is often a prolonged INR (from 24hr after overdose)** ❖ **N-acetylcysteine** o If <10–12h since overdose, not vomiting, and plasma paracetamol is above the line on the graph----start N-acetylcysteine. o If >8–24h and suspicion of large overdose (>7.5g) err on the side of caution and start N-acetylcysteine, stopping it if level below treatment line and INR/ALT normal o Acetylcysteine is given by IV: ▪ 150mg/kg in 5% dextrose over 15min in 1 hour. ▪ Then 50mg/kg in 500mL of 5% dextrose over 4h. ▪ Then 100mg/kg/16h in 1L of 5% dextrose. ▪ Side effect: Rash (treat with chlorphenamine) ❖ **Methionine** o An alternative (if acetylcysteine unavailable) is methionine 2.5g/4h PO for 16h (total: 10g) o But absorption is unreliable if vomiting. ❖ **Ongoing Treatment** o Next day do INR, U&E, LFT. If INR rising, continue N-acetylcysteine until <1.4. o If continued deterioration, discuss with the liver team. Don't hesitate to get help ❖ **Liver Transplantation** o Liver transplantation is occasionally needed for hepatic failure due to paracetamol overdose in patients who presented or were treated late. o Criteria ▪ Arterial pH <7.30 24 hours after ingestion ▪ PT > 100 seconds (Best indicator of prognosis) ▪ Creatinine > 300micromol/L ▪ Grade 3 or 4 hepatic encephalopathy.

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Ethanol Poisoning

Introduction	❖ Overdosage of ethanol (ethyl alcohol or 'alcohol') is very common
Clinical Features	❖ Dizziness, dysarthria and drowsiness. ❖ Hypotension, hypothermia ❖ Respiratory depression, metabolic acidosis & coma
Management	❖ Maintain a clear airway and adequate ventilation. ❖ Check blood glucose every 1–2 hours in severe poisoning. ❖ Correct hypoglycemia with glucose, not with glucagon. ❖ Look for signs of injury, especially head injury. ❖ Gastric lavage and activated charcoal are ineffective in ethanol intoxication

Methanol Poisoning

- **A 20-year-old laborer was brought in examination department with few hours' history of nausea, vomiting, and abdominal pain and decreased vision after consumption of a drink. On examination he was drowsy and breathing heavily. Pupils were dilated and sluggishly reacting to light. Fundoscopy revealed hyperemia of optic discs and evidence of retinal edema. Rest of the examination was normal. Subsequently his conscious level deteriorated and he developed generalized tonic-clonic fits. Labs ABG's, pH 7.29, PaO2 = 89 mmHg PaCO2 = 30mmHg, HCO3 8 mEq/L**

- **What is your diagnosis?**
- **How would you manage this case?**

✓ **Hint: Drowsiness, decreased vision, poorly reactive dilated pupils, metabolic acidosis with normal sugar and urea suggests the diagnosis**

Introduction	❖ Methanol is used as a solvent and in antifreeze ❖ Methylated spirits are a mixture of ethanol and water with about 5 % methanol
Clinical Features	❖ Drowsiness, vomiting, abdominal pain, coma ❖ **Blurring of vision.** ❖ Severe metabolic acidosis ❖ Hyperglycemia and ↓serum amylase. ❖ Survivors **may be blind from optic nerve damage** and develop Parkinsonian problems
Management	❖ Consider gastric lavage if <1hr since ingestion. ❖ **Do not give charcoal.** ❖ Measure ABG, U&E, HCO 3, Glucose, FBC, LFTs ❖ Plasma methanol if possible. ❖ Early use of fomepizole or ethanol ❖ Use sodium bicarbonate to correct metabolic acidosis (aim for pH 7.5). ❖ Give folinic acid (1mg/kg, max 50mg, IV every 6hr for 48hr) ❖ In severe poisoning, refer to ICU for hemodialysis and possibly IPPV.

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Snake Bite

- A 35 years old farmer is brought to you in emergency department with history of snake bite 3 hours ago. On physical examination pulse rate 80/min, temperature 99 F, B.P 100/70 mmHg with grossly swollen left legs. Systemic examination is normal.
- Discuss steps of management with their justification.
- What investigation will you like to do in emergency and why?

Common Snake Differences

Characteristics	Elapid	Viper	Sea Snakes (Hydrophiidae)
Common Snakes	❖ Cobra & King Cobra ❖ Krait ❖ Coral	❖ Pitted Viper ❖ Non- Pitted Viper	❖
Toxin	❖ Neurotoxic	❖ Vasculotoxic	❖ Myotoxic
Toxin Effects	❖ Muscle weakness ❖ Convulsions ❖ Dysphagia ❖ Diplopia ❖ Respiratory failure due to paralysis of Diaphragm ❖ Myocardial depression ❖ Hypotension & Shock	❖ Coagulation disorder ❖ Hemolysis ❖ Cellulitis ❖ Bleeding ❖ IC bleed ❖ Hypotension & Shock	❖ Generalized Muscle pain ❖ Rhabdomyolysis ❖ Myoglobinuria ❖ Renal failure ❖ Hyperkalemia
Toxins	❖ Proteolysin---cause of bleeding ❖ Thromboplastin----cause of DIC ❖ Hyaluronidases----cause of tissue edema and cellulitis ❖ Phospholipase A2----cause of RBC hemolysis		
Investigations	❖ CBC –to evaluate hemorrhage and hemolysis ❖ RFTs, electrolytes, LFT's, ❖ PT, aPTT, INR----to monitor bleeding ❖ Urinalysis---for myoglobinuria and hemoglobinuria ❖ ABG's---to look for any respiratory failure ❖ ECG ---to look for rhythm disturbance ❖ Fibrinogen & FDP's		
Treatment	❖ Detailed examination ❖ Reassurance of the patient o As 70% of all snake bites are non-venomous o All snakes are not poisonous o Even poison snakes do not inject full dose of venoms ❖ Avoid active movement of affected limb (so use splints/slings). ❖ Avoid incisions, suctioning and tourniquets. ❖ Monitor BP, pulse, temp, coagulation, renal and cardiorespiratory status ❖ Access an IV line (large bore) ❖ Anti-venom is indicated in patients with severe and progressive local tissue reactions, clinical signs & labs suggesting ❖ In 50% cases anti-venom is not required but if required give it early ❖ Before Giving anti-venom o O2, and IV fluids should be given o Adrenaline injection 0.5mL should be prepared. ❖ Dosage of anti-snake venom (ASV) o Mild cases--- 5 vials (50mL) o Moderate cases---5-10 vials (50-100mL) o Severe cases---10-20 vials (100-200mL) ❖ ASV should be given in 4 hours ideally, can be effective if given within 24 hours ❖ Compartment syndrome---Fasciotomy + FFPs		

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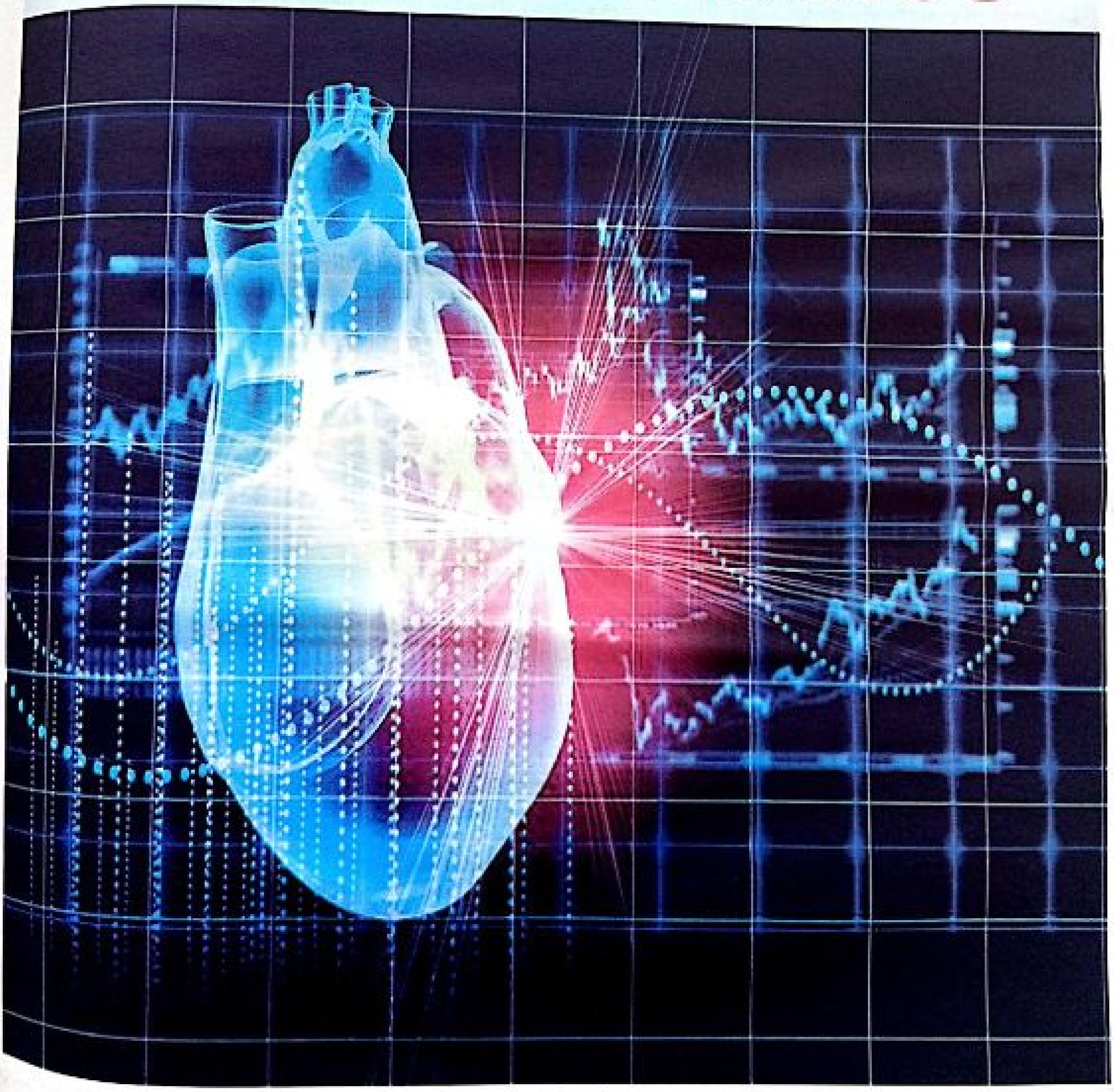
Clinical Scenarios



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Obstructive Lung Disease

- A lady of 42 years housewife has been suffering from breathlessness, occasional dry cough and weight loss for 2 years, her lung function tests reveal
  - FVC: 2.0L (predicted 2.4-3.6 L)
  - FEV1: 1.45 L (predicted 2.25-3.25 L)
  - Residual volume 2.89 L (predicted 1.55-2.32 L)
  - FRC 3.56 L (predicted 2.17-3.25 L)
  - TLC 5.86 L (predicted 3.96-5.66 L)
  - TLCO 4.7 mmol/min (predicted 5.8-8.7 L)
- **What is your likely diagnosis? Obstructive Airway Disease (most likely emphysema)**

  ✓ Hint: Thin patient with recent weight loss and obstructive pattern suggests emphysema

Difference between obstructive and Restrictive lung disease?

	Obstructive lung diseases	Restrictive lung diseases
Total lung capacity	↑	↓
Residual volume (RV)	↑	↓
FEV1	↓↓↓	Normal or ↓
FEV1/FVC	Decreased (Less than 0.7 or 70%)	Increased (more than 0.7 or 70%)

Examples of Obstructive Lung Disease?

- Bronchial asthma
- COPD
- Bronchiectasis
- Cystic Fibrosis

Explanation of Asthma and COPD

Asthma

Definition	Chronic inflammatory disorder of the airways resulting in episodes of reversible bronchospasm causing airflow obstruction Associated with reversible airflow limitation and airway hyper-responsiveness to endogenous or exogenous stimuli
Risk Factors	❖ Allergens (such as dust mites, cockroaches, pollens, and pets dander) ❖ Viral upper respiratory tract infections ❖ Occupational allergens and irritants such as perfumes, cleaners, or detergents, ❖ Changes in weather (i.e., from warm to cold) ❖ Strong emotional stimuli, and exercise ❖ Irritants, such as tobacco and wood smoke ❖ Medications such as **β-blockers** (including ophthalmic preparations), **NSAIDs (particularly aspirin, indomethacin and ibuprofen—5% patients)** can cause the sudden onset of severe airway obstruction.
Clinical Features	❖ Dyspnea, wheezing, chest tightness, cough (especially nocturnal), sputum ❖ Hyperinflated chest; hyper resonant percussion ❖ Symptoms can be paroxysmal or persistent

Features	Moderate Attack	Severe Attack	Respiratory arrest about to happen (Life threating)

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	Breathlessness	At rest, limits activity	At rest, Interferes with conversation	while at rest, mute
	Talks in	Phrases	Words	Silent
	Alertness	Usually agitated	Usually agitated	Drowsy or confused
	Respiratory rate	Increased	Often > 30/minute	> 30/minute
	Pulse/minute	100- 120	>120	Bradycardia
	Pulsus paradoxus (fall of systolic blood pressure of >10 mmHg during the inspiratory phase)	May be present	Often present >25mmHg	
	PEF	40- 70%	<40%	<25%
	PaO2	≥ 60	< 60: possible cyanosis	< 60: possible cyanosis
	PaCO2	< 42 mm Hg	≥ 42 mm Hg	≥ 42 mm Hg
	SaO2	90-95%	< 90%	< 90%

Labs	❖ O_2 saturation ❖ ABGs (consider in acute exacerbation, along with peak flows, in Emergency Department) ❖ Decreased PaO2 during attack (V/Q mismatch) ❖ Decreased PaCO2 in mild asthma (hyperventilation) ❖ Normal or increased PaCO2 is an ominous sign: patient is no longer able to hyperventilate (worsened airway obstruction or respiratory muscle fatigue) ❖ PEFR (portable device) --- ❖ PFTs (do when stable) ▪ Decreased FEV_1/FVC ratio (generally <0.7). ❖ CXR: hyperinflation or normal ❖ <u>Methacholine test (Bronchial provocation testing)</u> ▪ Useful when asthma is suspected but spirometry is non-diagnostic. ▪ Bronchial provocation is not recommended if the FEV_1 is less than 65% of predicted. ▪ A positive Methacholine test is defined as a fall in the FEV_1 of 20% or more at exposure to a concentration of 16 mg/mL or less.
Diagnosis	❖ Compatible clinical history plus either/or: ▪ FEV1 ≥ 15%* (and 200 mL) increase following administration of a bronchodilator/trial of corticosteroids ▪ > 20% diurnal variation on ≥ 3 days in a week for 2 weeks on PEF diary ▪ FEV1 ≥ 15% decrease after 6 mins of exercise

Classification Of Asthma Severity

	Mild	Moderate	Severe
Symptoms	> 2 days/week but not daily	Daily	Throughout the day
Night time awakenings	3-4x/month	> 1x/week	Often 7x/week
Short-acting β2-agonist use	> 2 days/week but not daily, and Daily not more than 1x on any day	Daily	Several times per day
Lung function	FEV1: FVC normal	FEV1: FVC reduced	FEV1: FVC reduced
Treatment Plan	Step 2	Step 3 and consider short course of oral systemic corticosteroids	Step 4 or 5 and consider short course of oral systemic corticosteroids

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Step Wise Treatment in Asthma

Intermittent Asthma	Persistent Asthma: Daily Medication Consult with asthma specialist if step 4 care or higher is required. Consider consultation at step 3.				
Step 1	**Step 2**	**Step 3**	**Step 4**	**Step 5**	**Step 6**
Preferred: SABA PRN	*Preferred:* Low-dose ICS *Alternative:* Cromolyn, LTRA, nedocromil, or theophylline	*Preferred:* Low-dose ICS + LABA OR Medium-dose ICS *Alternative:* Low-dose ICS + either LTRA, theophylline, or zileuton	*Preferred:* Medium-dose ICS + LABA *Alternative:* Low-dose ICS + either LTRA, theophylline, or zileuton	*Preferred:* High-dose ICS + LABA AND Consider omalizumab for patients who have allergies	*Preferred:* High-dose ICS + LABA + oral corticosteroid AND Consider omalizumab for patients who have allergies

↑ Step up if needed (first, check adherence, environmental control, and comorbid conditions)

Assess control

↓ Step down if possible (and asthma is well controlled at least 3 months)

Each step: Patient education, environmental control, and management of comorbidities.

Steps 2–4: Consider subcutaneous allergen immunotherapy for patients who have allergic asthma (see notes).

Quick-Relief Medication for All Patients

- SABA as needed for symptoms. Intensity of treatment depends on severity of symptoms: up to three treatments at 20-minute intervals as needed. Short course of oral systemic corticosteroids may be needed.
- Use of SABA > 2 days a week for symptom relief (not prevention of EIB) generally indicates inadequate control and the need to step up treatment.

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Clinical Scenarios

Chronic Obstructive Pulmonary Disease (COPD)

- **Definition**:
  - Progressive and irreversible condition of the lung characterized by chronic obstruction to airflow
  - 2 subtypes: chronic bronchitis and emphysema (usually coexist to variable degrees)
- **Clinical and Pathologic Features of COPD**

Chronic Bronchitis	Emphysema
Clinical diagnosis	Pathologic diagnosis
Defined by excessive secretion of bronchial mucus and is manifested by daily productive cough for 3 months or more in at least 2 consecutive years.	Abnormal permanent enlargement of air spaces distal to the terminal bronchiole, with destruction of their walls and without obvious fibrosis
Obstruction is due to narrowing of the airway lumen by mucosal thickening and excess mucus	Decreased elastic recoil of lung parenchyma causes decreased expiratory driving pressure, airway collapse, and air trapping
	2 Types ○ Centriacinar (respiratory bronchioles predominantly affected) ▪ Typical form seen in smokers, primarily affects upper lung zones ○ Panacinar (respiratory bronchioles, alveolar ducts, and alveolar sacs affected) ▪ Accounts for about 1% of emphysema cases ▪ α1-antitrypsin deficiency, primarily affects lower lobes

- **Risk factors**
  - Exposures
    - **Tobacco smoke**: accounts for 95% of cases in UK
    - Biomass solid fuel fires: wood, animal dung, crop residues and coal lead to high levels of indoor air pollution
    - Occupation: coal miners and those who work with cadmium
    - Outdoor and indoor air pollution
    - Low birth weight: may reduce maximally attained lung function in young adult life
    - Infections:
      - Recurrent infection may accelerate decline in FEV1;
      - HIV infection is associated with emphysema
  - Host factors
    - Genetic factors: α1-antitrypsin deficiency
- **Patterns of disease in advanced COPD**.

	Type: A Pink puffers (Emphysema Predominant)	Type B: Blue bloaters (Bronchitis Predominant) Mnemonic: B for Blue Bloaters, B for Bronchitis
Symptoms	Dyspnea (Major component) Minimal cough Tachypnea	Chronic productive cough (Major component) Mild dyspnea Purulent sputum
Signs	Pink skin Pursed-lip breathing Decreased breath sounds **Patient thin with recent weight loss** No peripheral edema	Cyanosis (2° to hypoxemia and hypercapnia) Crackles, wheezes Prolonged expiration if obstructive **Frequently obese** Peripheral edema from RVF (cor-pulmonale)

- **Global Initiative for Obstructive Lung Disease (GOLD), Classification of the Severity of COPD**

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- GOLD 1 (Mild)---- ------------FEV1 ≥ 80% of predicted
- GOLD 2 (Moderate) ---------FEV1 <80% of predicted
- GOLD 3 (Severe) ------------FEV1 <50% of predicted
- GOLD 4 (Very Severe)---- FEV1 <30% of predicted

- **Complications:**
    - Polycythemia 2° to hypoxemia
    - Chronic hypoxemia
    - Pulmonary HTN from vasoconstriction
    - Cor-pulmonale
    - Pneumothorax due to rupture of emphysematous bullae

- **Treatment:**
    - **Prolong Survival**

Smoking cessation	❖ **The single most important intervention in smokers with COPD is to encourage smoking cessation** ❖ Alternative for smoking: ○ Nicotine gum ○ Bupropion ER
Vaccination	**Pneumococcal vaccination & Yearly influenza vaccination**
Home oxygen	❖ Prevents cor-pulmonale and decreases mortality ❖ **Prescription of Long-Term Oxygen Therapy (LTOT) in COPD** ○ Arterial blood gases measured in clinically stable patients on optimal medical therapy on at least two occasions 3 weeks apart: ▪ PaO2 < 7.3 kPa (55 mmHg) ▪ PaO2 < 7.3–8 kPa (55–60 mmHg) plus pulmonary hypertension, peripheral oedema or nocturnal hypoxemia ○ Use at least 15 hours/day at 2–4 L/min to achieve a PaO2 > 8 kPa (60 mmHg) without unacceptable rise in PaCO2.

- **Symptomatic Relief (No Mortality Benefits)**
    - COPD should be treated in a stepwise approach

Short-Acting Bronchodilators includes anticholinergic (ipratropium bromide) and SABA's (salbutamol)	❖ Ipratropium bromide (**inhaler Atem/ Atem Nebulizer solution**) is **generally preferred to the short-acting beta-2-agonists** (Inhaler Ventolin) as a first-line agent because of its longer duration of action and absence of sympathomimetic side effects
Long-Acting Bronchodilators includes anticholinergic (tiotropium) and LABA's (formoterol, salmeterol,)	❖ More sustained effects for moderate to severe COPD
Corticosteroids	❖ **Inhaled corticosteroids alone should not be considered first-line therapy in stable COPD patients** ❖ combination therapy with an ICS + LABA's reduces the frequency of exacerbations ❖ ICS + LABA's ---Inc. the risk of pneumonia ❖ Oral steroids are important when treating exacerbations (5-7 days)
Theophylline	❖ Oral theophylline is a fourth-line agent for treating COPD patients who do not achieve adequate symptom control with inhaled anticholinergic, beta- 2 - agonist, and corticosteroid therapies ❖ **First-line agent for those with sleep-related breathing disorders**
Antibiotics	❖ Antibiotics are commonly prescribed to outpatients/admitted with COPD for the following indications: ○ To treat an acute exacerbation. ○ To treat acute bronchitis.

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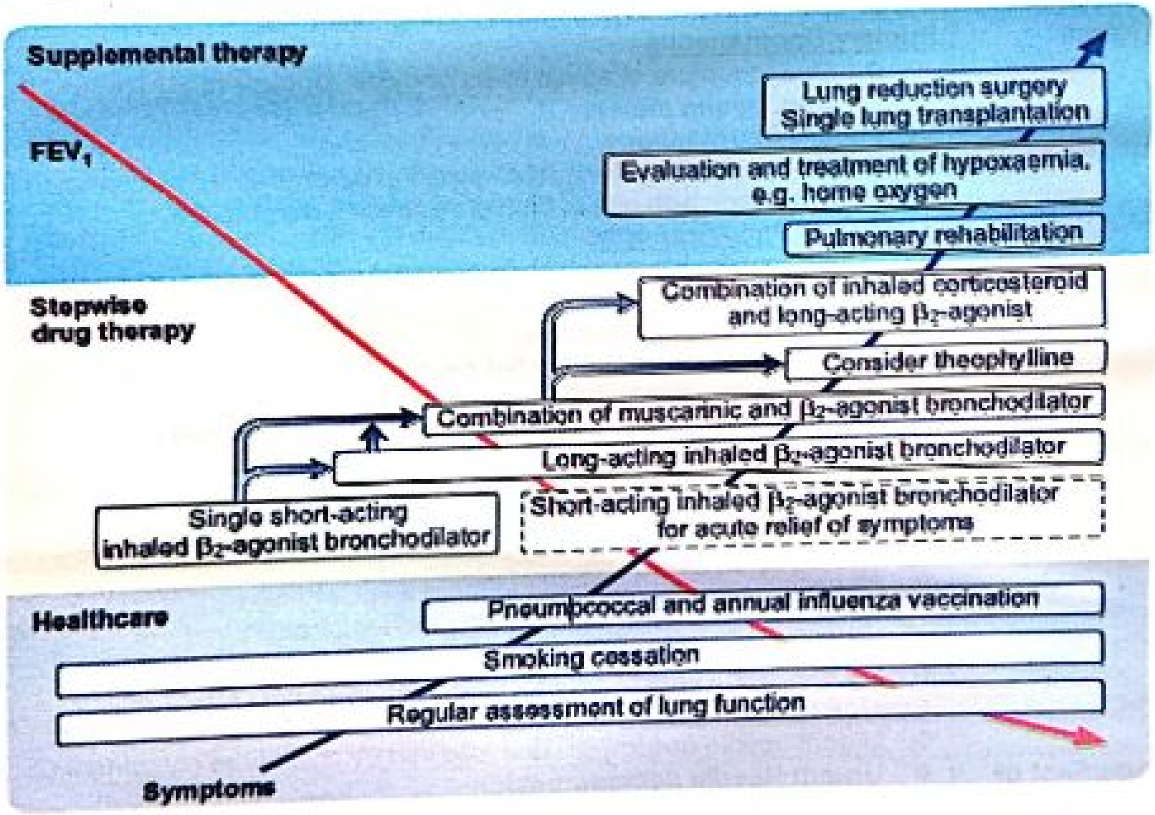
	o To prevent acute exacerbations of chronic bronchitis (prophylactic antibiotics).
Other measures	❖ Pulmonary Rehabilitation o Aerobic physical exercise programs (e.g., walking 20 minutes three times weekly or bicycling) o Pursed-lip breathing to slow the rate of breathing and abdominal breathing exercises to relieve fatigue of accessory muscles of respiration may reduce dyspnea in some patients. ❖ Adequate systemic hydration ❖ **Cough suppressants and sedatives should be avoided.** ❖ Human alpha - 1 –antitrypsin o Serum levels less than 11 mcmol/L (-50 mg/dL) are potential candidates for replacement therapy. o **IV dose of 60 mg/kg body weight once weekly.**
Surgery for COPD	Lung transplantation Lung volume reduction surgery (LVRS) or reduction pneumoplasty, is a surgical approach to relieve dyspnea and improve exercise tolerance in patients with advanced diffuse emphysema and lung hyperinflation.



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Pneumothorax due to COPD

- **A 60 years old smoker having frequent bouts of cough reported to emergency department with severe dyspnea after an episode of cough and chest pain. He is cyanosed, has pulse of 110/min, resonant barrel shaped chest with wheezing and diminished breath sounds on the left.**
- **What is most likely diagnosis?**
  - As the patient is a smoker and he has developed acute shortness of breath after an episode of cough and chest pain. He also has diminished breath sounds on the left side. Considering all this, the most likely diagnosis is left sided pneumothorax with underlying chronic obstructive pulmonary disease (COPD)
- **What are the three most important investigations?** CXR, ABGS, ECG
- **How are you going to manage this patient?** —Given Below

Pneumothorax	❖ Accumulation of air in pleural space ❖ Unilateral chest pain and dyspnea, unilateral chest expansion ❖ ↓ tactile fremitus (only increased in consolidation e.g. pneumonia), hyper resonance ❖ Diminished breath sounds, all on the affected side.
Types	<u>**Primary Spontaneous**</u> ❖ Due to rupture of apical blebs or cysts. **Occurs most frequently in tall, thin, young males.** <u>**Secondary Spontaneous**</u> ❖ Due to diseased lung (e.g., bullae in emphysema, infections), mechanical ventilation with use of high pressures → barotrauma. <u>**Traumatic Pneumothorax**</u> ❖ Caused by blunt (e.g. rib fracture) or penetrating (e.g., gunshot) trauma <u>**Tension Pneumothorax**</u> ❖ Can be any of the above. ❖ Air enters pleural space but cannot exit. ❖ Increasing trapped air → tension pneumothorax. ❖ Trachea deviates away from affected lung
Treatment	<u>**Primary pneumothorax**</u> ❖ If <2cm and asymptomatic ----Discharge & follow up x-ray after 2 weeks ❖ If <2cm and symptomatic ----Aspiration—if fails then chest tube <u>**Secondary pneumothorax**</u> ❖ All patients should be admitted for at least 24 hours ❖ If <1cm -----High flow oxygen, observe for 24 hours ❖ If 1-2cm -----Aspiration ❖ If >2cm/ >50 years of age/ symptomatic ------chest tube <u>**Tension pneumothorax**</u> ❖ Urgent needle decompression followed by chest tube placement
Management of above case	❖ <u>**Urgent Needle decompression**</u> ○ To remove the air, insert a large-bore (14–16G) needle with a syringe, partially filled with 0.9% saline, into the 2nd intercostal interspace in the midclavicular line on the side of the suspected pneumothorax. ○ Remove plunger to allow the trapped air to bubble through the syringe until a chest tube can be placed. ❖ <u>**As age is more than 50 and there is acute shortness of breath**</u> ○ Insert a chest tube—which may be removed after 24 hours if lung has re-expanded ○ He will be given supplemental oxygen, concentration of which will be guided by his PO2 ○ After managing the acute episode, he will be strictly advised to quit smoking. ○ Breathing exercise will be suggested which will b help to re-expand his lungs.

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Bronchogenic Ca/ Military TB + Addisonian crisis.

A 62 years old man was brought to emergency with history of malaise, fatigue and weight loss for 2 weeks. His wife said that he had been confused and drowsy and also had generalized convulsion 1 day back. He was a smoker and had smoked 20 cigarettes per day. There was no history of any drug intake. On examination he was drowsy and disoriented. Temperature was 37.8 C, pulse 126 beats/min and supine B.P was 110/70. His erect systolic B.P was 65 mmHg. General physical and systemic examination was unremarkable. Plasma osmolality 250 mOsm/kg, calcification and miliary shadowing throughout both lung fields.

What are the two likely diagnosis?

- Considering the key points—that is Smoker, fatigue, weight loss, Fits, postural hypotension and B/L miliary shadowing of both lung fields, the two likely diagnosis are
  - ✓ Miliary tuberculosis with tuberculous adrenalitis leading to Addisonian Crisis
  - ✓ Bronchogenic carcinoma with metastases to adrenal glands. Causing Addisonian Crisis.

What three further investigations would you carry out?

- Short synacthen test (short ACTH- suppression test):
  - 250 µg ACTH IM injection given
  - Normal individual → ↑ cortisol
  - Primary adrenal insufficiency→ ↑ ACTH
  - Secondary adrenal insufficiency→ ↓ACTH
- Bronchoscopy, bronchoalveolar lavage followed by lung biopsy. Lavage will be checked for AFB by ZN staining and culture. It will also be subjected to assays for malignant cells. Histological examination of biopsy specimen will establish the diagnosis.
- CT brain with contrast to rule-out any infective/ malignant process involving the brain

How will you manage the patient?

- Bloods for cortisol and ACTH.
- U&ES—can have high K+ (check ECG and give calcium gluconate if needed) and low Na+ (salt depletion, should resolve with rehydration and steroids).
- Hydrocortisone 100mg IV stat then 8 hourly
- IV fluid bolus, crystalloid or colloid to support BP.
- Monitor blood glucose: the danger is hypoglycemia.
- Blood, urine, sputum for culture, then antibiotics if concern about infection
- Change to oral steroids after 72h if patient's condition good
- Once the patient will be in convalescent phase, then I will give him oral hydrocortisone and will start him on Anti-tuberculosis regimen
- If the disease is malignancy then carry out palliative care, with consultation from the oncologist.

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Restrictive Lung Disease

- A 46-year-old woman is admitted in the emergency department with shortness of breath and cough, there is swelling in both feet's and extreme weakness. Respiratory function test reveals
  - Vital capacity: 2.0L (predicted 2.4-3.6 L)
  - FEV1: 2.1 L (predicted 2.25-3.25 L)
  - Transfer factor 4.1 L (predicted 5.8-8.7 L)
  - Residual volume 1.1 L (predicted 1.55-2.32 L)
- What is your likely diagnosis? Interstial Lung Disease /Restrictive Lung Disease
  - ✓ Hint: Slightly reduced OR normal FEV1 with decreased Residual volume think of restrictive lung diseases

Difference between obstructive and Restrictive lung disease?

	Obstructive lung diseases	Restrictive lung diseases
Total lung capacity	↑	↓
Residual volume (RV)	↑	↓
FEV1	↓↓↓	Normal or ↓
FEV1/FVC	Decreased (Less than 0.7 or 70%)	Increased (more than 0.7 or 70%)

Types of Restrictive Lung Diseases:

- **Poor breathing mechanics** (bony abnormalities, neuromuscular disease normal A-a gradient):
  - Poor muscular effort—polio, myasthenia gravis
  - Poor structural apparatus—scoliosis, morbid obesity
- **Interstitial lung diseases** (pulmonary ↓diffusing capacity, ↑A-a gradient):
  - Mnemonic: In ILD think **FASSTEN** and **BAD RASH**
  - Upper Lung Disease (**FASSTEN**)
    - **F**armer's lung (hypersensitivity pneumonitis/Extrinsic allergic alveolitis)
    - **A**nkylosing spondylitis
    - **S**arcoidosis
    - **S**ilicosis
    - **T**B
    - **E**osinophilic granuloma (Langerhans-cell histiocytosis),
    - **N**eurofibromatosis
  - Lower Lung Disease (**BADRASH**)
    - **B**ronchiolitis obliterans with organizing pneumonia (BOOP)
    - **A**sbestosis
    - **D**rugs (nitrofurantoin, hydralazine, INH, amiodarone, methotrexate,many chemo drugs)
    - **R**heumatologic disease (SLE, RA, Scleroderma)
    - **A**spiration
    - **S**cleroderma
    - **H**amman Rich (acute interstitial pneumonia) and IPF

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Idiopathic Pulmonary Fibrosis (IPF)/Cryptogenic Fibrosing alveolitis

- **A 50-year-old male, smoker for 10 years presents in casualty department with severe shortness of breath and unconsciousness for 12 hours. On enquiry, his son informs that his father had persistent cough and progressively increasing shortness of breath for the last 4 years. On examination, pulse is 90/min, B.P is 130/75 mmHg. He has moderate clubbing and cyanosis. Respiratory rate 30/min, chest expansion less than 1cm and bilateral basal crepitations. X-ray chest shows loss of volume and honey-comb appearance.**

- **Give the most likely diagnosis and justify it**
  - Most likely diagnosis is Idiopathic pulmonary fibrosis suggested by
    - Progressive shortness of breath.
    - Persistent cough.
    - Clubbing and cyanosis.
    - Reduced chest expansion.
    - B/L basal crepitations.
    - Reduced lung volume and honey comb appearance as seen on chest X-ray

- **Discuss 3 important investigations useful in diagnosis and management this case?**
- **Discuss important steps in the management?**

Introduction	❖ It is **the most common and most important** type of idiopathic interstitial pneumonia ❖ It is characterized by pathologic pattern called "**Usual Interstitial Pneumonia (UIP)**"
Clinical Features	❖ Presentation age: 50 -70 years of age (uncommon before 50 years) ❖ Dyspnea, especially on exertion ❖ Non-productive cough ❖ Crackles (dry, fine, end-inspiratory) ❖ Clubbing ❖ Features of cor-pulmonale
Investigations	❖ PFTs ○ Restrictive pattern: decreased lung volumes and compliance ○ Normal or increased FEV1/FVC (>70-80%), e.g. flow rates are often normal or high when corrected for absolute lung volume ○ DLco decreased due to V/Q mismatch (less surface area for gas exchange ± pulmonary vascular disease) ❖ Radiology ○ Chest X-ray ○ HRCT ▪ Ground glass appearance initially and honeycomb lung appearance in advanced disease ❖ Lung biopsy (In selected cases---where the diagnosis is uncertain) ○ Transbronchial lung biopsy ▪ (Note that the diagnosis of IPF cannot be confirmed on Transbronchial lung biopsy since the histologic diagnosis requires a pattern of changes rather than a single pathognomonic finding). ▪ Transbronchial biopsy may exclude IPF by confirming a specific alternative diagnosis
Diagnosis	❖ When no associated cause is evident of ILD this is IPF. ❖ A diagnosis of IPF/ UIP can be made with 90% confidence in patients over 65 years of age who have ○ Idiopathic disease by history and who demonstrate inspiratory crackles on physical examination; ○ Restrictive physiology on pulmonary function testing. ○ Characteristic radiographic evidence of progressive fibrosis over several years; ○ Diffuse, patchy fibrosis with pleural-based honeycombing on high-resolution CT scan
Treatment	❖ 02 inhalation, smoking cessation ❖ Prednisolone (0.5mg/kg) plus azathioprine (2-3 mg/kg) for 2 months ❖ Long term domiciliary oxygen ❖ In 2014, two agents, **Nintedanib** and **Pirfenidone**, were approved for the treatment of IPF (but very costly) ❖ **Lung transplantation (only definitive cure**--- with a 5 -year survival rate estimated at 50%)

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Clinical Scenarios

Sarcoidosis

Definition
- Sarcoidosis is a multisystem granulomatous disorder of unknown aetiology that is characterized by the presence of **non-caseating granulomas**

Epidemiology
- Presentation age: 20-40 years
- Female > male

Clinical Findings

Multisystem disorder but most commonly affects lung
- Lungs
  - Most common (90%)
  - Often asymptomatic, chest examination often normal
  - Cough, Dyspnea, chest pain,
  - **Bilateral hilar lymphadenopathy**
- **Common Extra Pulmonary Manifestations**
  - Skin:
    - Erythema nodosum---painful purplish nodules usually occurring on shins
    - Lupus pernio ---erythematous & plaques located symmetrically over nose, cheeks and ears
  - CVS: cardiac arrhythmias, heart block, sudden death
  - Eye:
    - Anterior or posterior uveitis, Sicca syndrome
  - Peripheral lymphadenopathy
  - Hepatomegaly ± splenomegaly
- **Two Acute Sarcoid Syndromes**
  - Lofgren's syndrome:
    - Fever, erythema nodosum, bilateral hilar lymphadenopathy, arthralgias
  - Heerfordt-Waldenstrom syndrome:
    - Fever, parotid enlargement, anterior uveitis, facial nerve palsy

Investigations
- **Laboratory investigations**
  - Lymphopenia, ↑ESR, LFT deranged.
  - Serum Ca^{2+}, 24 hr. urinary Ca^{2+} ---Increased, ---due to increased formation of calcitriol— 1,25- dihydroxyvitamin D3 by alveolar macrophages)
  - Elevated serum ACE in about~60% (non-specific, non-sensitive)
- **CXR** is abnormal in 90% and can be staged

Stage I	Bilateral Hilar Lymphadenopathy (BHL)
Stage II	BHL + Peripheral Pulmonary Infiltrates.
Stage III	Peripheral Pulmonary Infiltrates Alone
Stage IV	Pulmonary Fibrosis

- **HRCT**
- **The Broncho-alveolar lavage (BAL)**
- **Biopsy** (Tissue biopsy/ Transbronchial lung biopsy---Diagnostic)

Treatment
- **Generally:**
  - Patients with BHL alone don't need treatment as most recover spontaneously.
  - If the disease is not improving spontaneously 6 months after diagnosis start steroids
  - For Acute disease: Bed rest and NSAIDS
- **Indications for Corticosteroids**
  - Parenchymal lung disease (symptomatic, static, or progressive)
  - Uveitis
  - Hypercalcemia
  - Neurological or cardiac involvement

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Tuberculosis

- A 20 years old lady presents with history of anorexia, weight loss, grade fever and cough for the last 6 months. She is also having diarrhea and abdominal pain alternating with constipation for the last 4 months. Examination revealed tenderness in right illac fossa and hepatosplenomegaly. Examination of CVS is unremarkable.

- What is the most clinical diagnosis? —Disseminated TB (Miliary TB)
- Give four investigation with possible findings and justifications.
- How will you manage this case?

- A 30 years old man was brought to outpatient by his friend 10 days prior admission. He developed high grade fever with chills and evening rise. He had cough with scanty sputum in last 2 months. Fever did not settle despite various AntiBiotics and antimalarial therapy. He had to miss his annual business trip to south Africa due to his illness. He has never smoked. On examination he was pale, ill looking with temperature 39.2 C, pulse was 120/min, regular, BP was 120/80 mmHg. He had white coated tongue and cervical adenopathy. Chest examination was normal. cardiac auscultation revealed pericardial rub. Other systems were normal.
- Investigations:
  - Hb 108g/dl
  - ESR 60mm in first hour.
  - TLC 5.2 × 109/L
  - Neutrophils 88%
  - Lymphocytes 10%
  - Eosinophil's 2%
- CXR showed enlarged cardiac shadow with bilateral hilar lymphadenopathy.

- List your differential diagnosis in order of priority.
  - Lymphoma
  - **Tuberculosis**
  - **Sarcoidosis**
  - Infectious mononucleosis
  - HIV seroconversion
  - Toxoplasmosis
  - Syphilis
  - Brucellosis

- How will you investigate this patient?
  - following investigations will be sent
    - Sputum for AFB, to look for mycobacteria tuberculosis,
    - Bronchoscopy followed by bronchial washings these washings will be subjected for ZN staining, C/S and malignant cells.
    - In sarcoidosis, there is reversal of CD4 to CD8 ratio.
    - Excision biopsy of cervical lymph nodes. It will show the characteristic histological changes of lymphoma, tuberculosis, sarcoidosis,
    - CT scan chest followed by Ct guided fine-needle aspiration of hilar lymph nodes. This will not only help us to determine the stage of lymphoma but will also enable us to rule out other causes.
    - Ultrasound abdomen to look for hepatosplenomegaly of intra-abdominal lymph nodes.
    - Peripheral smear examination to look for atypical lymphocytes seen in infectious mononucleosis, HIV or toxoplasma
    - VDRL will be done to rule out syphilis.
    - HIV enzyme linked immunosorbent assay.

Introduction	❖ Tuberculosis (TB) is caused by infection with Mycobacterium tuberculosis (MTB) ❖ Mycobacteria are **acid-fast bacilli (AFB)** ❖ Mode of transmission= Respiratory droplets
Pathogenesis	❖ Bacilli are inhaled and lodged in the alveoli ❖ Bacilli then initiate recruitment of macrophages and lymphocytes ❖ Surviving organisms multiply and disseminate via lymphatic's and the blood stream

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	❖ Macrophages undergo transmission into Epitheloid and Langerhans cells which aggregate with lymphocytes to form granuloma (**Caseating granuloma –Hallmark of disease)** ○ Ghon Focus: ▪ It is the primary lesion characterized by aggregation of numerous granuloma in the periphery of lung ○ Ghon complex: ▪ It refers to combination of calcified primary lesion (i.e. Ghon focus) with lymph node involvement ○ Ranke's complex: ▪ It is formed when Ghon complex undergoes fibrosis and calcification
Latent Vs. Reactivation Tuberculosis	**Latent Tuberculosis** ❖ Means a patient is infected with Mycobacterium tuberculosis, but the patient does not have active tuberculosis. **Reactivation Tuberculosis** ❖ The majority of TB cases are due to reactivation of latent infection. ❖ Factors implicated in the reactivation of latent TB ▪ HIV co-infection ▪ Immunosuppressant therapy (chemotherapy/monoclonal antibody treatment) including corticosteroids ▪ Diabetes mellitus ▪ End-stage chronic kidney disease ▪ Malnutrition ▪ Ageing
Clinical Features	❖ Constitutional symptoms (fatigue, anorexia, night sweats, weight loss) ❖ **Pulmonary TB** ▪ Chronic productive cough ± hemoptysis ▪ CXR consolidation or cavitation, lymphadenopathy ▪ Non-resolving pneumonia despite standard antimicrobial therapy ❖ **Miliary TB** ▪ Widely disseminated spread especially to lungs, abdominal organs, marrow, CNS ▪ CXR: multiple small 2-4 mm millet seed-like lesions throughout lung ❖ **Extrapulmonary TB**

Lymph nodes	❖ **Most common extra-pulmonary site** ❖ Most common site= **cervical and mediastinal nodes** ❖ **Painless lymphadenopathy** ❖ **Initially mobile, later becomes matted and suppurative**
Gastrointestinal disease	❖ Most common site = **Ileocecal region** ❖ Right iliac fossa Mass ❖ Tuberculous peritonitis= abdominal pain, distention, ascitic fluid exudative with predominance of lymphocytes
Pericardial disease	❖ Pericardial effusion= raised JVP, increased pericardial dullness ❖ Constrictive pericarditis = raised JVP, Early third heart sound
CNS	❖ Meningitis ❖ Tuberculoma
Bone and joint disease	❖ Bone: ○ Most common site is spine known as **Pott's disease** ○ Most common site of spine= **Lower thoracic and lumber region** ○ **Psoas abscess** = Cold abscess in inguinal region ❖ Joints: Most common site= **Hip and Knee, Poncet's disease**

❖ **Investigations:**

○ **Screening for latent TB**

▪ PPD/Mantoux skin tests/tuberculin skin test.

○ 0.1 mL of purified protein derivative (PPD) is injected intradermally on the volar surface (portion of the forearm that is on the same side as the palm)

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- The transverse width in millimeters of induration (not erythema) at the skin test site is measured after 48-72 hrs.
- PPD test only useful in latent Tb (asymptomatic patients) and not to be used in symptomatic patients or those with abnormal CXR
- Interpretation:

Induration of >15mm	❖ Considered positive in persons with no risk factors for TB
Induration of >10mm	❖ Considered positive in ❖ Prisoners ❖ Health care workers ❖ Persons working in Nursing homes, Homeless shelters & other health care facilities ❖ Persons with following medical conditions (DM, Leukemia, Lymphoma, CKD, CA head & Neck) ❖ IV drug users
Induration of >5mm	❖ Considered positive in ❖ Recent contacts of individuals with active tuberculosis. ❖ HIV positive patients ❖ Immunocompromised patient (e.g. Prednisolone 15mg/day for 1 month or more) ❖ Persons with fibrotic changes on chest films suggestive of prior tuberculosis. ❖ Patients with organ transplants
False negative result	❖ Severe TB ❖ New-born and elderly ❖ HIV if CD4 count < 200 ❖ Malnutrition ❖ Malignancy

- **TB blood test "aka" IFN-γ release assay (IGRA)**—Includes (including the QuantiFERON and T-SPOT tests)
  - In patients previously infected with TB, T-cells produce increased amounts of IFN-γ when re-exposed to TB antigen
  - Detects antigen not present in the BCG vaccine or in most types of non-tuberculous mycobacteria (NTM), therefore fewer false positives and superior to older Mantoux tests

- **How to deal with Latent TB**
  - If the latent Tb is proven
  - First exclude active TB (CXR or sputum collection or both)
  - If no active disease—Latent TB proven—and has risk factors for reactivation as described earlier – start on INH 300mg orally –for 9 months

- **Diagnostic test/ investigations for active pulmonary TB**
  - CXR:
  - Sputum staining & Culture:
    - Three morning specimens recommended of sputum (either spontaneous or induced) should be collected for acid-fast bacilli smear and culture.
  - Sputum Gene-Xpert (Nucleic acid amplification (NAA)
    - Detects the DNA in TB bacteria.
    - It uses a sputum sample and can give a result in less than 2 hours.
    - It can also detect the genetic mutations associated with resistance to the drug Rifampicin More
  - Standard drug susceptibility testing of sputum culture
    - Considered when a treatment regimen is failing, and when sputum cultures remain positive after 2 months of therapy.

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- **Treatment:**
  - Initial therapy ---(2 months---4 drugs)
    - Mnemonic RIPE: (Rifampicin, Isoniazid, Pyrazinamide, Ethambutol)
  - Continuation phase – (4 months—2 drugs)
    - That are Isoniazid & Rifampicin
  - Extended treatment: (For 9-12 months)—considered in the following
    - HIV- positive patients, Tuberculous osteomyelitis, Miliary TB, Meningitis (Minimum 12 months), Pregnancy
  - INH caused neuropathy
    - Pyridoxine (vitamin B6) 25 to 50 mg PO daily should be used as prophylaxis with INH to prevent neuropathy
    - While 50–100 mg orally daily as treatment if neuropathy develops.
  - Baby can be breastfed while taking ATT
  - **Drug dosages & Complications**

Drug	Dosage	DOTS (Directly observe therapy short-course) Initially daily therapy for 2 weeks followed by drugs 3 times/week	Complications
Isoniazid	5 mg/kg	15 mg/kg	Peripheral neuropathy, Hepatitis
Rifampicin	10 mg/kg	10mg/kg	Orange-red color body secretions (urine, tears), hepatitis,
Ethambutol	15-25mg/kg	25-30mg/kg	Optic neuritis (color blindness for green, decreased visual acuity)
Pyrazinamide	15-30 mg/kg	50-70 mg/kg	Hyperuricemia, Gout, Hepatitis
Streptomycin	15mg/kg	25-30mg/kg	8th (vestibular) nerve damage, nephrotoxicity.

Categories of Anti-tuberculosis Drugs: WHO

Group 1 (First line drugs)	Isoniazid, Rifampicin, Ethambutol, Pyrazinamide
Group 2 (Injectable agents)	Kanamycin, Amikacin, Capreomycin, Streptomycin
Group 3 (Fluoroquinolone)	Levofloxacin, Moxifloxacin, Ofloxacin
Group 4 (Oral bacteriostatic agents)	Ethionamide, Cycloserine, Para-Aminosalicyclic acid (PAS), Prothionamide
Group 5 (Unclear role)	Clofazamine, Linezolid, Amoxicillin/Clavulanate, Imipenem/cilastatin, High dose isoniazid, Clarithromycin, Bedaquiline

Multi-Drug Resistant TB (MDR-TB)

- TB which is resistant to isoniazid and rifampicin
- How to treat MDR-TB (Regimen)

Step 1	Choose any of the following Injectable (Group 2 drugs)	Kanamycin Amikacin
Step 2	Choose a higher generation fluoroquinolone (Group 3 drugs)	Levofloxacin Moxifloxacin
Step 3	Add group 4 Drugs	Cycloserine/Terizidone Para-Aminosalicyclic acid (PAS) Ethionamide/Prothionamide

Note:
- Add two or more Group 4 drugs
- Ethionamide/Prothionamide considered the most effective
- Always use a higher generation fluoroquinolone (ciprofloxacin is not effective and never use it)

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- Intensive phase for 8 months (includes injectable) --- and a total of 20 months therapy is advised

Extensive Drug Resistant TB (XDR-TB)

- TB which is resistant to isoniazid + rifampicin (MDR-TB) + any of the fluoroquinolone (such as levofloxacin or Moxifloxacin) and to at least one of the three injectable second-line drugs (Amikacin, capreomycin or kanamycin).
- How to treat XDR-TB

Step 1	Use pyrazinamide and any other Group 1 agent that may be effective.
Step 2	Use an injectable agent to which the strain is susceptible and consider an extended duration of use (12 months or possibly the whole treatment). If resistant used an agent that has used never before
Step 3	Use a higher-generation fluoroquinolone such as Moxifloxacin or Gatifloxacin
Step 4	Use all Group 4 agents that have not been used extensively in a previous regimen or any that are likely to be effective.
Step 5	Add two or more Group 5 drugs (consider adding bedaquiline)
Note: Intensive phase for 8 months (includes injectable) --- and a total of 20 months therapy is advised	

How to Follow Up a Patient of TB

- Conversion of cultures from positive to negative is the most reliable indicator of response to treatment.
- For smear-positive pulmonary TB patients treated with first-line drugs, sputum smear microscopy may be performed at completion of the intensive phase of treatment
- if the specimen obtained at the end of the intensive phase (month 2) is smear-positive, continue with the intensive phase, sputum smear microscopy should be obtained at the end of the third month
- if the specimen obtained at the end of month 3 is smear-positive, sputum culture and drug susceptibility testing (DST) should be performed

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Pneumonia

- **A 40-year-old male is admitted with altered consciousness, cough, fever of 4 days duration. Clinical examination reveals temp 101 F, pulse 100/min, BP 110/60mmHg, stupurous, no neck rigidity, plantars B/L down going. The Fundi are normal. Chest examination shows signs of consolidation on left side. Investigations reveals**
  - TLC 14.5 × 10^9, 80% neutrophils, serum urea 3.5 mmol/L, serum Na+ 120 mmol/L and K+ 3.0 mmol/L
- **What is the most probable diagnosis?** --left sided lobar pneumonia due to legionella pneumophilia
- **Mention the investigation to confirm the diagnosis?** CXR, serological test, culture
- **List three principle of management?** Antibiotics, treat hyponatremia, O2 inhalation or antipyretics

Pneumonia

Morphological types of pneumonia	**Lobar**	❖ S. pneumoniae (most frequently) ❖ Legionella ❖ Klebsiella	
	Bronchopneumonia	❖ S. pneumoniae ❖ S. aureus ❖ H. influenzae ❖ Klebsiella	
	Interstitial (atypical) pneumonia	❖ Viruses (influenza, CMV, RSV, adenoviruses) (most common pneumonia in children—measles virus produces giant cell pneumonia) ❖ Mycoplasma (most common interstitial overall) ❖ Legionella ❖ Chlamydia	
Types	**Community Acquired Pneumonia**	**Hospital Acquired Pneumonia (Nosocomial Pneumonia)**	
	Pneumonia occurring before or within 48 hours of hospital admission Agents: ❖ Streptococcus pneumonia (most common) ❖ H. Influenza ❖ *Staphylococcus aureus*	Pneumonia occurring after 48 hours of hospital admission Agents: ❖ S aureus (both MSSA & MRSA)—most common ❖ P aeruginosa (most common) ❖ E. coli ❖ Ventilator Associated Pneumonia patients (Acinetobacter species and Stenotrophomonas maltophilia)	
Severity of Pneumonia and Admission Criteria for Pneumonia	**CURB-65 score**		
	C	Confusion present (abbreviated mental test score <8/10)	
	U	(Plasma) urea level >7 mmol/L (126 mg/dl)	
	R	Respiratory rate >30/min	
	B	Systolic BP <90 mmHg; diastolic BP <60 mmHg Mortality rates increase with increasing score	
	65	Age >65	

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Organism Specific Pneumonia Characteristics

Streptococcus pneumonia	❖ Gram positive, lancet shaped diplococcus, **Rust colour sputum** ❖ **Most common cause of CAP** ❖ More common in elderly, alcoholics, post-splenectomy, immunosuppressed, ❖ and patients with chronic heart failure or pre-existing lung disease ❖ Treatment -- amoxicillin, benzylpenicillin, or cephalosporin
Staphylococcal aureus	❖ Most **common cause of pneumonia post influenza** ❖ Association - **intravenous drug users**, or patients with underlying disease, e.g. leukaemia, lymphoma, cystic fibrosis (CF)
Klebsiella pneumonia	❖ Is rare. ❖ 5 A's of KlebsiellA: ○ Aspiration pneumonia (in Alcoholics and DiAbetics) ○ Abscess in lungs and liver ○ "Curr-A-nt jelly" sputum (blood/mucus) ❖ Treatment: cefotaxime or imipenem.
Pseudomonas aeruginosa	❖ Green sputum ❖ **Most common cause of nosocomial pneumonia** ❖ **Most common pathogen in bronchiectasis and CF** ❖ Most common cause of death due to pneumonia in patients with cystic fibrosis
Mycoplasma pneumonia	❖ Bacteria with no cell wall, (therefore penicillin not useful against it) ❖ Occurs in epidemics about every 4yrs. ❖ It presents insidiously with flu-like symptoms (headache, myalgia, arthralgia) followed by a dry cough. ❖ Diagnosis: PCR sputum or Mycoplasma serology. ❖ **Cold agglutinins may cause an autoimmune haemolytic anaemia.** ❖ Complications: skin rash (erythema multiforme, Stevens–Johnson syndrome, meningoencephalitis or myelitis), **Guillain–Barré syndrome.** ❖ Treatment: Clarithromycin (500mg/12h) or doxycycline (200mg loading then 100mg OD) or a fluroquinolone (e.g. ciprofloxacin).
Legionella pneumophilia	❖ **Colonizes water tanks kept at <60°C (e.g. hotel air-conditioning and hot water systems) causing outbreaks of Legionnaire's disease.** ❖ Flu-like symptoms (fever, malaise, and myalgia) precede a dry cough and dyspnoea. ❖ Extra-pulmonary features include ○ GI symptoms: abdominal pain, diarrhoea ○ CNS: headache, confusion, coma ○ **Hyponatraemia, deranged LFTS** ❖ Diagnosis: Legionella urine antigen/culture. ❖ Treatment: fluoroquinolone for 2–3wks or clarithromycin
H. Influenza	❖ Common in COPD, smokers ❖ Most common bacterial cause of acute exacerbation of COPD ❖ Most common organisms isolated from patients with bronchiectasis:
Pneumocystis jirovecii	❖ Most common opportunistic infection in patients with acquired immunodeficiency syndrome (AIDS) ❖ Occurs when CD4+ cell count < 200/mm3

❖ **Complications of pneumonia (HAP /CAP)**

- Respiratory failure (Type-1)
- Hypotension
- Atrial fibrillation
- Lung abscess
- Pleural effusion & empyema

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Nephrotic Syndrome

- **A 7-year-old girl presented with swelling of the whole body with scanty micturition for 10 days. Her urine examination reveals color: straw, albumin +++, RBC: nil, pus cells 0-2/HPF, fatty cast present.**

- **What is likely diagnosis?** Nephrotic syndrome
- **Mention investigations?** Serum total protein, albumin, 24 hours urinary protein, serum lipid profile
- **Discuss treatment option?** Prednisolone

  ✓ Hint: Generalized edema with massive proteinuria is suggestive of nephrotic syndrome

Nephrotic Syndrome

- Includes a group of conditions characterized by increased basement membrane permeability
- Characteristic features:
  - Massive proteinuria (daily loss of ≥ 3.5 grams of protein per day).
  - Hypoalbuminemia (serum albumin less than 3 g/100 mL)
  - Generalized edema.
  - Hyperlipidemia and hypercholesterolemia are caused by increased hepatic lipoprotein synthesis.
- Causes:
  - <u>**Primary glomerular disease**</u>: Minimal change disease, Membranous GN, Focal segmental glomerulosclerosis
  - <u>**Systemic diseases**</u>: SLE, Amyloidosis, Diabetic nephropathy

Minimal change disease (lipoid Nephrosis)	❖ **Most common cause of Nephrotic syndrome in children** ❖ Light microscopy → normal-appearing glomeruli. ❖ Electron microscopy → disappearance or fusing of epithelial foot processes. ❖ **Excellent response to corticosteroids** ❖ Associations: ○ Hodgkin's lymphoma, thymoma, infectious mononucleosis
Membranous nephropathy (membranous glomerulonephritis)	❖ **Most common cause of Nephrotic syndrome in adults** ❖ Light microscopy → diffuse capillary and GBM thickening ❖ Electron microscopy → spike and dome" appearance with Subepithelial deposits. ❖ Poor response to corticosteroids ❖ Associations: ○ **SLE (10%), hepatitis B**, syphilis, malaria infection; drugs (gold salts or penicillamine); or **malignancy.** ○ The disorder sometimes causes renal vein thrombosis, because of loss of antithrombin III, protein C and S & ↑ fibrinogen
Focal segmental glomerolosclerosis	❖ It is more common in African Americans and is **associated with HIV.** ❖ It is characterized by sclerosis of some glomeruli, in these affected glomeruli only a portion of capillary tuft is involved ❖ Light Microscopy→segmental sclerosis ❖ Electron Microscopy→ effacement of foot process/Podocyte effusion (same as Minimal change disease, but minimal change > focal segmental sclerosis)
Diabetic nephropathy	❖ ↑ in mesangial matrix → two patterns: ○ Diffuse glomerulosclerosis → diffusely increase in mesangial matrix. ○ Nodular glomerulosclerosis → nodular accumulations of mesangial matrix material (**Kimmelstiel-Wilson nodules**).
Renal Amyloidosis	❖ Amyloidosis refers to accumulation of insoluble fibrillar proteins that form β-pleated sheaths, two types ❖ Light Microscopy—**Congo red stain shows apple-green birefringence**

Primary (AL) amyloidosis	**Secondary (AA) amyloidosis**
Most common → in developed world.	Less common in developed countries
Due to deposition of proteins from Ig Light chains	Occurs in patients with long-standing neoplasia or inflammation and is associated with serum amyloid protein called AA protein
Can occur as a plasma cell disorder or associated with multiple myeloma and Waldenström macroglobulinemia	It is often seen in concert with tuberculosis, leprosy, RA

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Nephritic Syndrome (Acute Glomerulonephritis)

- A 12-year-old boy presents with scanty micturition and puffy face. Urine examination shows color smoky, pus cell 0-2/HPF, RBC 20-30/HPF, RBC cast: present

What is likely diagnosis? Acute glomerulonephritis
- Mention investigation and treatment? —Given Below
- **Mention two complications?** Acute renal failure, hyperkalemia, hypertensive encephalopathy

✓ Hint: scanty micturition and puffy face, mostly after a sore throat is suggestive of acute post streptococcal glomerulonephritis

Nephritic Syndrome

- (Nephritic) Inflammatory rupture of the glomerular capillaries, with resultant bleeding
- Characterized features: (A HOPE)
  - **A**zotemia, **H**ematuria, **H**ypertension, **O**liguria, **P**roteinuria (less than 3g/day), **E**dema

Acute post streptococcal glomerulonephritis

- Most common type of post-infectious glomerulonephritis in childrens
- Occurs 1–4 weeks after a sore throat caused by group A β-hemolytic streptococci i.e. streptococcus pyogenes
- Type III hypersensitivity reaction.
- Clinical features:
  - Sudden onset of fever, oliguria, hematuria (cocoa-colored urine)
- Findings:
  - Serum C3 decreased
  - ASO titers elevated
  - Electron microscopy→ Subepithelial humps
  - Immunofluorescence→ lumpy bumpy appearance
- Management:
  - Symptomatic: fluid and sodium restrictions; loop diuretics for HTN and edema
  - In severe cases, may require dialysis if renal function significantly impaired
  - Treat with penicillin or erythromycin if evidence of persistent GAS infection

Rapidly progressive (crescentic) glomerulonephritis

- Nephritic syndrome that progresses rapidly to renal failure within weeks or months
- Light microscopy & Immunofluorescence → Crescent shape glomerulonephritis
- Disease processes that may result in this pattern are

Goodpasture syndrome	Wegener's glomerulonephritis
Involves lung and renal vessels	Involving upper respiratory tract, lung and renal vessels
Hemorrhagic pneumonitis (pneumonia plus hemoptysis) Nephritic syndrome	Sinusitis, otitis media Hemorrhagic pneumonitis (pneumonia plus hemoptysis) Nephritic syndrome

IgA nephropathy (Berger disease)

- Most common type of nephritic syndrome overall and is due to deposition of IgA in the mesangium
- It presents with recurrent episodes of hematuria following upper RTI, GI infections, occurs 1-2 days after infection
- Associations: coeliac disease/dermatitis herpetiformis, **Henoch-Schonlein purpura**
- Light microscopy→ mesangial expansion
- Immunofluorescence→ granular mesangial IgA and lambda light chain deposition
- Not to be confused with Buerger disease (Thromboangiitis obliterans).

Alport syndrome

- ***Most commonly X-linked dominant.***
- Defective glomerular basement membrane synthesis due to abnormal collagen type IV
- Clinical features: Mnemonic: "**can't see, can't pee, and can't hear a bee**."
  - Eye problems (e.g., retinopathy, lens dislocation)
  - Glomerulonephritis
  - Sensorineural deafness
- Electron microscopy→"Basket-weave" appearance.

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Nephritic Syndrome causing ARF

A man of 40 years complained of weight gain, fatigue and vomiting of one-week duration. On examination B.P is 155/105 mmHg with peri- orbital edema. His BUN 85 mg/dl, Creatinine is 9 mg/dl, urine analysis revealed proteinuria of 2+, RBC casts and leucocytes. Routine check-up by his physician a month earlier revealed normal B.P and lab tests.

What is your diagnosis?

- The diagnosis in this patient is acute renal failure due to acute nephritic syndrome.
- He had all the features of acute nephritis:
  - Hematuria – RBC casts on urinalysis suggesting glomerular involvement.
  - Hypertension – B.P 150/105mmHg.
  - Edema (periorbital edema and history of weight gain)
  - Uraemia – raised BUN (85mg/dl) and serum creatinine (9mg/dl)
  - A month earlier he had normal B.P and labs, thus suggesting acute onset of renal failure. Her symptoms of acute Uraemia are vomiting, fatigue and fluid overload.

List four serological tests you like to do.

- Anti-streptolysin-O titre, elevated in post-streptococcal nephritis, commonest cause of acute nephritic syndrome.
- Anti-neutrophilic cytoplasmic antibody (ANCA), present n vasculitis, which also cause acute nephritic syndrome.
- Anti- glomerular basement membrane (Anti-GBM), seen in good pasture's syndrome, one of the causes of acute nephritis.
- Anti-nuclear antibody (ANA), present in systemic Lupus erythematosus (SLE) in which renal involvement is seen in one third of the patients.

How would you treat such a patient?

- Early referral to a nephrologist.
- Keep BP <130/80, or <125/75
- Depends on etiology
- Steroid therapy and other immunosuppression
- monitoring for progression to end stage renal disease
- Dialysis
- Treatment for hyperkalemia if any

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Renal Pulmonary syndrome

- A 40 years old male presented with dyspnea, cough and hemoptysis of 10 days duration. He has never smoked. On examination, temperature 37 C, pulse 110/min, B.P 170/100 mmHg, pitting ankle edema is +ive, JVP is not raised. On auscultation of chest, there are B/L crepitations. CVS examination is unremarkable. Lab investigations:
  - Hb 10.0g/dL, WCC 16×10⁹, ESR 85 mm/1st hour, microcytic hypochromic picture
  - Urea= 230mg/dl, creatinine 8.5mg/dl, urine R/E is albumin ++, numerous RBC, granular cast
  - X-ray chest: wide spread interstitial shadowing of both lung fields.
  - ABG: PaO2 58 mmHg, PaCO2 20mmHg.

- **What is your differential diagnosis?**
  - He has presented with renal- pulmonary syndrome. The probable causes could be:
    - Good pasture syndrome.
    - Wegener's granulomatosis.
    - Microscopic polyangiitis.
    - Atypical pneumonia due to mycoplasma or legionella, causing renal involvement too, in the form of acute nephritic syndrome.

- **How will you further investigate this case?**
  - Anti-GBM antibodies will be present in good pasture syndrome.
  - ANCA antibodies will be done p-ANCA is present in case of microscopic polyangiitis while c-ANCA is raised in Wegener's granulomatosis,
  - Sputum C/S
  - Serological tests for mycoplasma IgM and legionella antibodies.
  - Urinary legionella antigen assays will be done.
  - Renal biopsy may demonstrate glomerular sclerosis with or without crescent formation and liner deposition of IgG and C3 along the basement membrane in case of Good-pasture syndrome.

- **How would you manage this patient?**
  - He will be managed in high Dependency unit.
  - O_2 inhalation (4-5 L/min) will be started.
  - Plasma exchange will be carried out as Goodpasture/ anti-GBM glomerulonephritis is the most likely cause. This modality of treatment has better outcome in ANCA positive vasculitis as well.
  - Steroids will be given to suppress inflammation.
  - Immunosuppressant e.g. cyclophosphamide will be started to inhibit further antibody synthesis.
  - As he already has advanced acute renal failure, so he will be started on hemodialysis as well to remove Uraemic toxin. This can be scheduled according to serial estimation of blood urea of creatinine.
  - Monitoring of ABG's, serum potassium, urea, creatinine and blood pressure will be carried out.

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Clinical Scenarios

Acute Pyelonephritis

- **A 30-year-old female presents with high temperature, anorexia, nausea, vomiting, increased frequency of micturition and pain in the lumbar region, urine examination shows: Albumin +, RBC: few, Pus cells: Plenty**

- **What is likely diagnosis?** Acute pyelonephritis
- **Investigation to confirm the diagnosis?** Urine C/S

✓ Hint: UTI with high temperature and lumbosacral pain is suggestive of acute pyelonephritis

Acute Pyelonephritis	❖ Neutrophils infiltrate renal interstitium. Affects cortex with relative sparing of glomeruli/vessels. ❖ Clinical features: o Fever, flank pain, nausea/vomiting, chills. ❖ Causes includes o Ascending UTI (E. coli is most common) ❖ Risk factors: o Diabetes mellitus, pregnancy, indwelling urinary catheter, urinary tract obstruction ❖ Complications: o Chronic pyelonephritis, renal papillary necrosis, perinephric abscess, urosepsis. ❖ Treatment: Antibiotics.
Chronic Pyelonephritis	❖ Coarse, asymmetric corticomedullary scarring, blunted calyx. ❖ Atrophic tubules can contain eosinophilic casts resembling thyroid tissue (**thyroidization of kidney**) ❖ Causes: o Chronic urinary tract obstruction and repeated bouts of acute inflammation. ❖ Complications: o Renal hypertension and end-stage renal disease. ❖ **Xanthogranulomatous pyelonephritis** o Rare o Grossly orange nodules that can mimic tumor nodules o Characterized by widespread kidney damage due to granulomatous tissue containing foamy macrophages.

Sterile Pyuria

- **A 40-year-old male presents with low grade fever, weakness, loss of appetite and difficulty in micturition. Urine examination shows Albumin +, RBC 5-6/HPF, Pus cell 50-60/HPF, culture: No growth**

- **What does the urine report show?** Sterile pyuria
- **What are the causes of such report?**
  - Renal tuberculosis
  - Partially treated UTI
  - Urethritis e.g. Chlamydia
  - Renal stones
  - Appendicitis
  - Bladder/renal cell cancer
  - Adult polycystic kidney disease

✓ Hint: presence of pus cells in urine but no organism on culture is Sterile pyuria

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Rhabdomyolysis

- **A 22-year-old man who has multiple soft tissue injuries because he was beaten, presents with passage of low quantity of urine and puffiness around eyes.**

- **What is the possible diagnosis?**
  - The patient has developed acute renal failure due to rhabdomyolysis.
  - Individual with multiple soft tissue injuries is liable to develop necrosis of skeletal muscle, leading to myoglobinuria.
  - Oliguria and puffiness around eyes suggest the acute renal failure

- **List five other causes which can give rise to similar presentation?**
  - Post-ischaemia; e.g. embolism, clamp on artery during surgery
  - Trauma: prolonged immobilization (e.g. after falling)
  - Burns
  - Crush injury
  - Excessive exercise
  - Uncontrolled seizures
  - Drugs and toxins: statins, alcohol, ecstasy, heroin, snake bite, carbon monoxide,
  - Neuroleptic malignant syndrome
  - Infections: Coxsackie, EBV, influenza

- **What investigations you would like to carry out?**
  - Plasma CK >1000iU/L (often >10,000iU/L).
  - MI must be excluded as a cause (troponin negative).
  - Visible myoglobinuria (tea- or cola-colored urine) occurs when urinary myoglobin exceeds 250µg/mL (normal <5ng/mL)43
  - Urine is +ive for blood on dipstick but without RBC on microscopy.
  - Others: K+↑, PO43– ↑↑, Ca2+↓ (enters muscle), urate↑.
  - AKI occurs 12–24 hours later, and DIC is associated

- **How would you like to treat this patient with respect to his urinary problems?**
  - Urgent treatment for hyperkalemia (Ca gluconate +insulin/glucose + beta 2 agonist nebulization)
  - IV fluid rehydration is a priority to prevent AKI: maintain urine output at 300mL/h until myoglobinuria has ceased;
  - At least 4-6 L/day has to be given. But at the same time, careful monitoring for fluid overload is to be done. Intake /output record monitoring will be carried out.
  - IV sodium bicarbonate is used to alkalinize urine to pH >6.5, to stabilize
  - Dialysis may be needed.
  - Prognosis is good if treated early.

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Clinical Scenarios

Chronic Renal Failure

- A 64 years old man complained of lassitude and weakness of 6 months duration, along with occasional lumbar backache over the same time period. Three months prior to his admission he had been found to be anemic and had been treated as an outpatient with oral and parenteral iron. With symptomatic improvement during this time he has noticed nocturnal frequency. For 3 days prior to admission he had been oliguric. There was a past history of Peptic ulceration and a long history of migraine headaches.

- On Examination he looked unwell and was pale. Blood pressure 180/120mmHg. R/R 28/min, a pericardial friction rub was present.

- **Investigations:**
  - Hb 8.6mg/dl
  - MCHC 33%
  - Chest X-ray showed enlarged cardiac shadow and Upper lobe venous distension.
  - Urine Showed trace of albumin with 1-2 cells/HPF.

- **Discuss five disorders in the differential diagnosis.**
  - Chronic renal failure due to diabetic nephropathy, as he gives history of nocturia with weakness and lassitude.
  - Chronic renal failure due to obstructive uropathy (stone/prostatic enlargement) this is suggested by occasional lumbar pain, followed by oliguria.
  - Chronic renal failure due to multiple myeloma as he is an elderly male, with generalized weakness, lassitude and anemia. Nocturia and peptic ulceration can be due to hypercalcemia.
  - Chronic renal failure due to analgesic nephropathy as there is a long history of migraine and he might have taken various analgesics for a long period.
  - Chronic renal failure due to chronic pyelonephritis as he has history of lumbar pain.

- **Plan and justify your diagnosis.**
  - The most likely diagnosis is chronic renal failure due to NSAIDS induced tubule-interstitial nephritis
  - He has developed complications of uremic pericarditis and pulmonary edema.
  - He is also anemic.
  - There is no past history of diabetes mellitus, fever, hematuria, pyuria and passing stones in the urine.
  - But he does give history of migraine headache for long time for which he might have taken NSAIDS
  - NSAIDs induced tubulointerstitial nephritis is the third leading cause of intrinsic renal failure.
  - Proteinuria (Traces) and presence of 1-2 white cells/HPF also supports the diagnosis.
  - Other features may include White cells casts, red cell cast/HPF.
  - Blood picture may show eosinophilia.

- **Give steps in the management along with their justifications.**
  - He will be admitted in the ward.
  - I.V line will be taken.
  - Renal replacement therapy in the form of dialysis will be arranged. Regardless of the level of creatinine and serum potassium, He needs dialysis due to pericarditis and fluid over load.
  - There after intake output monitoring will be done.
  - Echocardiogram will be done to check for cardiac tamponade or pericardial effusion.
  - Pericardiocentesis will be planned in cause of clinical deterioration.
  - Control of blood pressure is important in addition to dialysis he will be given antihypertensive like calcium channel blockers and alpha blockers along with diuretics.
  - He is anemic too. Improvement in hemoglobin levels will help to improve his weakness. Moreover it will reduce the fluid overload. He will be started on S/C erythropoietin on weekly basis. Intravenous iron will be given if required.
  - Protein-restricted diet will be given. Phosphate binders (ca carbonate or acetate) will be given in case of hyperphosphatemia.

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Nephritic/Nephrotic Syndrome

A 25 years old man weighting 60kg, present with generalized anasarca. On examination, his jugular venous pressure is not raised; blood pressure in sitting position is 150/90mmHg. He has pallor; Hb is 10g/dL and serum protein 4g/dL

Give four differential diagnoses?

- Nephritic syndrome; as he has hypertension, generalized anasarca, hypoproteinemia, may be due to proteinuria.
- Nephrotic syndrome leading to renal failure. As nephrotic syndrome itself does not cause hypertension. Hypoalbuminemia is a feature of nephrotic syndrome.
- Chronic liver disease, leading to hypoproteinemia and anasarca.
- Protein losing enteropathy, again causes hypoproteinemia and anasarca.

List the important investigations?

- Urine R/E; to look for hematuria, proteinuria.
- 24-hour urinary proteins, in order to quantity proteinuria.
- Serum urea and creatinine, to assess glomerular filtration rate.
- Serum electrolytes.
- Serum albumin to document hypoalbuminemia.
- Fasting lipid profile
- U/S whole abdomen----To look for spleen and renal size.
- Serum complement levels, as some glomerulonephritis like post-streptococcal causes decreased complement levels.
- Antibody profile e.g. ANA, ASO titer, ANCA will be advised, if above investigations support nephritic/nephritic syndrome.
- Liver function tests including liver enzymes (ALT, AST) and PT, INR, for underlying liver disease.
- If needed, hepatitis viral serology and α1-antitrypsin levels to rule out protein-losing enteropathy.
- Renal biopsy; so as to determine the cause of nephritic /nephritic syndrome according to the changes seen on light, electron microscopy and immunofluorescence

Briefly outline the management plan?

- The management varies according to the diagnosis.
- For nephrotic/nephritic syndrome certain general and specific measures will be taken.
- Strict control of hypertension is important. He will be advised ACE inhibitors or ARB's to control blood pressure as well as proteinuria.
- Dietary measures like low fat intake and low protein intake will be recommended.
- He will be advised and counseled regarding discontinuation of smoking.
- Anti-hyperlipidemic drugs e.g. HMG CO-A reductase inhibitors will be prescribed to control hyperlipidemia.
- Salt, fluid restriction will be advised.
- He will be given diuretics to reduce fluid overload.
- The Specific management depends on the type of glomerulonephritis, serum creatinine and response to general measures. In the most common variety, sparing agents are given.
- In case of chronic liver disease, salt, fluid restriction along with diuretics will be given.
- Parenteral albumin is given as replacement therapy so as to increase the oncotic pressure.

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Primary Hyperparathyroidism

- A 52-year-old woman presented with frequency of micturition, extreme weakness, loss of appetite and constipation, abdominal pain and weight loss for 7 months, investigation reveals
  - HB 10.6 g/dL, WBCs 8900, polymorphs 55%, lymphocytes 43%, monocytes 2%, ESR 90mm
  - Plain X ray KUB: Nephrocalcinosis, USG abdomen: Calcification in both kidneys
  - Urine R/E: few pus cells, protein +, creatinine 1.4mg/dL, serum Electrolytes: Normal
- What is likely diagnosis? **Primary hyperparathyroidism**
  - ✓ Hint: Weakness + abdominal pain + constipation (↑ Ca++), Renal stones= Primary Hyperthyroidism

Hyperparathyroidism

Condition	Causes	S. Ca	S.PO₄	PTH	Features
Primary hyperparathyroidism	❖ Parathyroid adenoma (most common) ❖ Parathyroid carcinoma	↑	↓	↑	Mnemonic: painful bones, renal stones, abdominal groans and psychic moans Painful bones: fractures, osteoporosis, Osteitis fibrosa cystica Renal stones due to ↑ Ca++ Abdominal groans → constipation due to ↑ Ca++ Psychic moans→ depression, seizures
Secondary hyperparathyroidism	❖ Chronic renal failure ❖ Vitamin D deficiency	↓	↑	↑	Renal osteodystrophy
Tertiary hyperparathyroidism	❖ Refractory (autonomous) hyperparathyroidism resulting from chronic renal failure. ❖ Prolonged secondary hyperparathyroidism, in which continuous stimulation results in parathyroid adenoma and autonomous PTH secretion	↑	↑	↑	

Osteitis Fibrosa Cystica

- ❖ A disorder resulting in a loss of bone mass, a weakening of the bones as their calcified supporting structures are replaced with fibrous tissue, and the formation of cyst-like ***brown tumors*** in and around the bone, causes bone pain
  - ❖ It is due to ↑PTH, classically associated with 1° (but also seen with 2°) hyperparathyroidism

Renal Osteodystrophy

- ❖ Is a bone disease that occurs when your kidneys fail to maintain proper levels of calcium and phosphorus in the blood

Investigations:

- Raised calcium, low phosphate
- PTH may be raised or inappropriately normal
- Technetium-MIBI subtraction scan

Management: Surgery

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Hyperthyroidism and Hypothyroidism

- A 35-year-old female presented with generalized weakness and weight gain. Her thyroid function test reveals:
  - Serum FT3: 2.0 pmol/L (normal 3.1 - 6.8 pmol/L)
  - Serum FT4: 7 pmol/L (normal 12 - 22pmol/L)
  - TSH: 35 mU/L (Normal 0.5-5.1 mU/L)
- **What is most likely diagnosis?** Hypothyroidism

- **A 32-year-old lady presented with bilateral apoptosis, gritty sensation and discomfort in both eyes, palpitation and weight loss. Investigation reveals**
  - Serum FT3: 9.0 pmol/L (normal 3.1 - 6.8 pmol/L)
  - Serum FT4: 215 pmol/L (normal 12 - 22pmol/L)
  - TSH: 0.04 mIU/L (Normal 0.5-5.1 mIU/L)
- **What is your diagnosis?** Hyperthyroidism due to Graves' disease
- **What are other causes of such findings?** Toxic multinodular goiter, toxic adenoma

Hyperthyroidism vs. Hypothyroidism

	Hyperthyroidism	Hypothyroidism
General	Weight loss despite ↑ appetite Heat intolerance	Weight gain despite ↓ appetite Cold intolerance
Skin	Sweaty Pretibial myxedema	Dry skin, dry hairs
Heart	Systolic hypertension Tachycardia	Diastolic hypertension Bradycardia
Neurological	Anxiety Hyper-reflexia Irritability Tremors	Carpal tunnel syndrome Delayed relaxation of reflexes
Reproductive	Oligomenorhea, infertility	Menorrhagia, infertility
GIT	Diarrhea	Constipation
Eye	Exophthalmos (graves' disease)	
Labs	↑ T3 and T4 ↓TSH	↓T3 and T4 ↑TSH
Causes	❖ Graves' disease (toxic diffuse goitre) accounts for 50-60% of cases of Thyrotoxicosis. ❖ Toxic nodular goitre ❖ Toxic adenoma ❖ Subacute (De Quervain's) thyroiditis ❖ Post-partum thyroiditis ❖ Amiodarone therapy	❖ **Primary atrophic hypothyroidism:** ○ Most common cause ○ Autoimmune disease, ❖ **Hashimoto's thyroiditis:** ○ Autoimmune disease as above with goiter (positive microsomal antibodies) ○ 10 times more common in women ❖ **After thyroidectomy or radioiodine treatment** ❖ **Drug therapy** (e.g. lithium, amiodarone or anti-thyroid drugs such as carbimazole) ❖ **Dietary iodine deficiency**
Treatment	❖ Carbimazole (SE: Agranulocytosis) ❖ Propylthiouracil, radioiodine and surgery	❖ Levothyroxine (Side effect atrial fibrillation)

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Graves' disease

- A 32-year-old lady presented with bilateral apoptosis, gritty sensation and discomfort in both eyes, palpitation and weight loss. Investigation reveals
  - Serum FT3: 9.0 pmol/L (normal 3.1 - 6.8 pmol/L)
  - Serum FT4: 215 pmol/L (normal 12 - 22pmol/L)
  - TSH: 0.04 mIU/L (Normal 0.5-5.1 mIU/L)
- **What is your diagnosis?** Hyperthyroidism due to Graves' disease
- **What are other causes of such findings?** Toxic multinodular goiter, toxic adenoma

Graves' disease

Introduction	❖ Most common cause of hyperthyroidism ❖ Associated with HLA-DR3 and HLA-B8
Features	❖ Typical features of thyrotoxicosis ❖ Specific signs limited to Grave's: o Eye signs (30% of patients): exophthalmos, ophthalmoplegia o Pretibial Myxedema o Thyroid acropachy: ▪ Subperiosteal new bone formation, (aka Marie's Disease). ▪ Most commonly manifests as clubbing of the fingers and toes with soft tissue swelling. ▪ It is sometimes associated with Graves' disease but not with other causes of hyperthyroidism ▪ No effective treatment for acropachy.
Autoantibodies	❖ Anti-TSH receptor stimulating antibodies (90%) ❖ Anti-thyroid peroxidase antibodies (50%)
Management	❖ **Treatment options include:** o **Titration of anti-thyroid drugs (ATDs, for example carbimazole)** ✓ Carbimazole is started at 40mg and reduced gradually to maintain euthyroidism ✓ Typically continued for 12-18 months ✓ Patients following an ATD titration regime have been shown to suffer fewer side effects than those on a block-and-replace regime ✓ The major complication of carbimazole therapy is agranulocytosis o **Block-and-replace regimes:** ✓ Carbimazole is started at 40mg ✓ Thyroxine is added when the patient is euthyroid ✓ Treatment typically lasts for 6-9 months o **Radioiodine treatment** ✓ Goiter shrinkage may occur in up to 30% following RAI. ✓ Contraindications include ▪ Pregnancy (should be avoided for 4-6 months following treatment) and ▪ Age < 16 years. ▪ Thyroid eye disease is a relative contraindication, as it may worsen the condition o **Surgery** ✓ The surgical procedure of choice for patients with Graves' disease is a total resection of one lobe and a subtotal resection of the other lobe, leaving about 4 g of thyroid tissue (Hartley–Dunhill operation). o **Propranolol is often given initially to block adrenergic effects**
Thyroid eye disease	❖ **Prevention:** o Smoking is the most important modifiable risk factor for development of thyroid eye ❖ **Disease** o Topical lubricants may be needed to help prevent corneal inflammation caused by exposure o Rapid administration of steroids o Where sight is threatened, orbital decompression may be necessary o Radioiodine treatment: ✓ May increase the inflammatory symptoms seen in thyroid eye disease. ✓ In a recent study of patients with Graves' disease around 15% developed, or had worsening of, eye disease. (can lead to malignant exophthalmos) ✓ Prednisolone may help reduce the risk (Patients with thyroid eye disease are generally treated with steroids for 1 to 2 weeks prior to starting radioiodine therapy.

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Hypothyroidism

- **A 35-year-old female presented with generalized weakness and weight gain. Her thyroid function test reveals:**
  - Serum FT3: 2.0 pmol/L (normal 3.1 - 6.8 pmol/L)
  - Serum FT4: 7 pmol/L (normal 12 - 22pmol/L)
  - TSH: 35 mU/L (Normal 0.5-5.1 mU/L)
- **What is most likely diagnosis?** Hypothyroidism

Hypothyroidism

Introduction	❖ 5-10 times more common in females than males.
Types	❖ **Primary atrophic hypothyroidism:** ❖ **Hashimoto's thyroiditis:** ❖ **After thyroidectomy or radioiodine treatment** ❖ **Drug therapy** (e.g. lithium, amiodarone or anti-thyroid drugs such as carbimazole) ❖ **Dietary iodine deficiency**
Hashimoto Thyroiditis	❖ Autoimmune disorder of the thyroid gland. ❖ Chronic lymphocytic thyroiditis ❖ It is typically associated with hypothyroidism although there may be a transient thyrotoxicosis in the acute phase. ❖ It is 10 times more common in women ❖ Most common cause of hypothyroidism in iodine-sufficient regions. ❖ Features o Features of hypothyroidism o Goiter: firm, non-tender o Autoimmune disorder with antithyroid peroxidase (antimicrosomal) and antithyroglobulin antibodies. ❖ Simple clue o **Hypothyroidism + goiter + anti-TPO antibodies** ❖ Association and treatment o Associated with ↑ risk of non-Hodgkin lymphoma (typically of B-cell origin). o Histologic findings: **Hürthle cells**, lymphoid aggregates with germinal centers o Treatment: Levothyroxine (adverse effect atrial fibrillation)
Treatment of Hypothyroidism	❖ Initial starting dose of levothyroxine should be lower in elderly patients and those with ischemic heart disease (e.g. 25–50 mcg/day). While in adults 75-100 mcg daily depending upon functions, TSH level ❖ Following a change in thyroxine dose thyroid function tests should be checked after 6-8 weeks ❖ The therapeutic goal is 'normalization' of the thyroid stimulating hormone (TSH) level. ❖ Side-effects of thyroxine therapy o Hyperthyroidism: due to over treatment o ↓ bone mineral density o Worsening of angina o Atrial fibrillation
Hypothyroidism in Pregnancy	❖ Pregnancy usually increases the levothyroxine dosage requirement; an increase in levothyroxine requirement has been noted as early as the fifth week of pregnancy. ❖ Adequate levothyroxine is critical to the health of the fetus. ❖ Therefore, it is prudent to increase levothyroxine dosages by approximately 20–30% as soon as pregnancy is confirmed. ❖ The fetus is at least partially dependent on maternal T4 for its CNS development—particularly in the second trimester. ❖ By mid-pregnancy, women require an average of 47% increase in their levothyroxine dosage. ❖ Postpartum, levothyroxine replacement requirement ordinarily returns to pre-pregnancy level. ❖ Decreased levothyroxine dose requirements occur in women after delivery, after bilateral oophorectomy or natural menopause, after cessation of oral estrogen replacement, or during therapy with GnRH agonists.

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Clinical Scenarios

De Quervain's (subacute) thyroiditis

- **A 32-year-old woman presents with fever, dry cough, pain in the throat, headache, body ache, palpitation and intolerance to heat for 1 week. There is fine tremor of outstretched hand. Thyroid is diffusely enlarged, soft, non-tender, no bruit. Investigation reveal** diffusely enlarged, soft, non-tender, no bruit. Investigation reveal chest x ray normal
    - HB 11.1 g/dL, WBC 3500, ESR 110mm, chest x ray normal
    - Serum FT3: 8.7 pmol/L (normal 3.1 - 6.8 pmol/L)
    - Serum FT4: 205 pmol/L (normal 12 - 22pmol/L)
    - TSH: 0.4 mIU/L (Normal 0.5-5.1 mIU/L)
    - Radio iodine uptake: After 2 Hours 7% (normal 5-15%), After 24 hours 5.1 % (normal 5-15%)
- **What is likely diagnosis?** De Quervain's (subacute) thyroiditis

- **A 32-year-old woman presents with fever, dry cough, and sore throat for 1 week. She feels lethargic now with swelling in front of the neck which is soft and no-tender There is fine tremor of outstretched hands as well**
- **What is your likely diagnosis?** De Quervain's (subacute) thyroiditis
- **How Radioiodine uptake would response?** Given below
- **What is the treatment?** Given below

De Quervain's (subacute) thyroiditis

Subacute (De Quervain's) thyroiditis	❖ Thought to occur following viral infection and ❖ Typically presents with hyperthyroidism **Features:** ○ Hyperthyroidism: ✓ Marked constitutional symptoms - weight loss in particular and thyroid function tests are often normal ○ Painful goiter: ✓ Thyroid enlargement is typically rapid, occurring over a period of days ○ Raised ESR ○ **Globally reduced uptake on iodine-131 scan** **Management:** ○ Usually self-limiting - most patients do not require treatment ○ Thyroid pain may respond to aspirin or other NSAIDs ○ Propranolol is the most appropriate treatment for transient symptoms of hyperthyroidism. ○ In more severe cases steroids are used to reduce inflammation, particularly if hypothyroidism develops ○ Hypothyroidism is usually mild but persists for 2-4 months. ○ A few patients (~5%) remain hypothyroid and need long term thyroid hormone replacement. ○ Recurrences are uncommon. ○ Carbimazole and PTU are ineffective (As inc hormones are due to destruction not due to inc production)

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Hyperthyroidism with Pregnancy

- **A 25 years old female presented with history of palpitation, excessive sweating, weakness with frequent bowel movements. She gave history of weight loss despite of good appetites. On examination, skin is warm and moist, pulse 90/min, BP 150/60 mmHg. On auscultation systolic murmur is audible. In laboratory investigations**
  - Hb is 11.5 g/dL. ESR 65mm.1st hour.
  - Urine examination is positive for pregnancy test.

- **What is the diagnosis?**
  - She is suffering from hyperthyroidism as she has palpitations, sweating, diarrhea, and weight loss with normal appetite. On examination she is tachycardia, has warm and moist skin. All these features suggest hyperthyroidism as the most likely diagnosis.

- **What investigation will you carry out?**
  - Free T4 and T3 will be elevated.
  - Supersensitive TSH will be decreased as a part of negative feedback effect.
  - Anti-TSH receptor stimulating antibodies (90%), Anti-thyroid peroxidase antibodies (50%) will also be elevated in case of graves' disease.
  - Serum β HCG levels.

- **What is the treatment?**
  - To control her symptoms, she will be given propranolol 20mg daily. This can be adjusted according to the response.
  - To decrease the secretion of thyroxin
    - PTU used in first trimester of pregnancy (due to methimazole teratogenicity)
    - Methimazole used in second and third trimesters of pregnancy (due to risk of PTU-induced hepatotoxicity).
    - Either thiourea should be given in the smallest dose possible, permitting mild subclinical hyperthyroidism to occur since it is usually well tolerated.
    - Both propylthiouracil and methimazole cross the placenta and can induce hypothyroidism, with fetal TSH hypersecretion and goiter.
    - Fetal ultrasound at 20–32 weeks gestation can visualize any fetal goiter, allowing fetal thyroid dysfunction to be diagnosed and treated.
    - Fetal hypothyroidism is rare if the mother's hyperthyroidism is controlled with small daily doses of propylthiouracil (50–150 mg/day orally) or methimazole (5–15 mg/day orally).
  - If still thyrotoxicosis is not controlled, thyroid surgery will be advised. Surgery is best performed during the second trimester.
  - Radioactive iodine is contraindicated in this pregnant female.

Primary hyperaldosteronism (Conn syndrome)

- **A 25-year-old female is complaining of excessive thirst, weakness, polyuria, nocturia and insomnia for 6 months. Her BP is 165/115 mmHg. Investigation reveals**
  - Hb 12.7 g/dL, WBC 6800, polymorphs 60%, lymphocytes 39%, monocytes 1%, ESR 20mm in 1st hour,
  - Urea 38mg/dL, creatinine 1.2 mg/dL, Na+ 148mmol/L, chloride 107 mmol/L, potassium 2.8 mmol/L, Bicarbonate 32 mmol/L, RBS 9.3 mmol/L
  - Chest X-ray: cardiomegaly, left ventricular type

- **What is your diagnosis?** Primary hyperaldosteronism
- **Lab findings?** ↑ aldosterone, ↓ renin.

✓ Hint: Hypertension and hypokalemic alkalosis is highly suggestive of primary hyperaldosteronism, also known as Conn syndrome.

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Cushing Syndrome

- **A housewife of 40 years presented with frequent headache, vertigo and insomnia for 2 months. Blood pressure is 160/100 mmHg. Investigation reveals:**
  - Hb 11.5 g/dL, WBCs 8300, polymorph 64%, lymphocytes 33%, ESR 48mm, Platelets 270,000.
  - Urine R/E: Glycosuria (++), Proteinuria (+)
  - Serum electrolytes: Na: 145, K 3.1, bicarbonate 30mmol/L
  - Chest x-ray: heart slightly enlarged
  - Fasting blood sugar: 9.0 mmol/L
- **What is likely diagnosis?** Cushing syndrome
- **What are differential diagnosis?** Cushing syndrome, Primary aldosteronism, ectopic adrenocorticotropic hormone (ACTH) syndrome.

✓ Hint: Hypertension with hypokalemia and DM is highly suggestive of Cushing syndrome.

Cushing Syndrome

Causes	❖ Exogenous: o Exogenous corticosteroid medication (most common) ❖ Endogenous causes: o Cushing disease: ACTH-secreting pituitary adenoma. Most common endogenous cause o Adrenal cortical adenoma or adrenal carcinoma o Ectopic production of ACTH→ small cell carcinoma of the lung
Features	❖ Non-specific→secondary diabetes, HTN, osteoporosis ❖ More specific→ central obesity with extremity wasting, moon facies, buffalo hump ❖ Most specific→spontaneous bruising, skin striae, proximal myopathy
Lab values changes	Mnemonic: Some People Get Cold ❖ Sodium ↑ ❖ Potassium ↓ ❖ Glucose ↑ ❖ Calcium ↓
Diagnosis	❖ **Step-1: To know whether patient has Cushing syndrome** o 24 hours urinary free cortisol o Dexamethasone suppression test ▪ Normal person→ suppress cortisol levels ▪ Cushing syndrome→ failure to suppress cortisol levels ❖ **Step:2 To know cause of Cushing syndrome** o Measure Plasma ACTH level: ▪ ↓ ACTH level →source is adrenal glands ▪ ↑ ACTH level→ source is either Pituitary ACTH tumor or Ectopic ACTH production ❖ **Step: 3 To differentiate between Pituitary and ectopic ACTH production** o 48-hour high dose dexamethasone suppression test: ▪ It involves administration of dexamethasone 6 hourly for 48 hours, measuring 24-hour urinary cortisol 2nd day ▪ If ACTH is suppressed → source is pituitary gland, next step is do MRI brain ▪ If ACTH is not suppressed→ source is ectopic ACTH, next step is do CT chest/abdomen

❖ **Clinical pearls**
- Ectopic ACTH secretion (e.g. SCLC) is characteristically associated with very low potassium levels.
- An insulin stress test is used to differentiate between true Cushing's and pseudo-Cushing's
- Pseudo-Cushing's: mimics Cushing's
  - ✓ Often due to alcohol excess or severe depression
  - ✓ Causes false positive dexamethasone suppression test or 24-hour urinary free cortisol
  - ✓ Insulin stress test may be used to differentiate

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Pheochromocytoma

- **Mr. Khan 35 years of age has noticed a worsening of his vision. New spectacles from the optician did not improve his sight. For the past one week, he is breathless. He gives history of headache, palpitations and diaphoresis of and on for the past few months. On examination pulse 98/min & regular, respiratory rate 30/min, blood pressure 270/160 mmHg.**

- **What is the diagnosis?**
  - He has developed hypertensive retinopathy due to secondary hypertension.
  - The episodic development of headache, palpitation and diaphoresis suggests pheochromocytoma

- **Name 5 investigations and justify how these will help to reach the most appropriate diagnosis?**
  - 24 hours urine collection will be done and then will be assayed for catecholamines metabolites and aldosterone.
    - Increased urinary excretion of catecholamines and their metabolites (metanephrine, normetanephrine, and vanillylmandelic acid) is characteristic of pheochromocytoma
    - Aldosterone will be elevated in conn's syndrome
  - Serum sodium and potassium will be assayed. Patient with primary hyperaldosteronism (conn's) will have hypokalemia.
  - Plasma renin levels, will be decreased in case of conn's and increased in renal artery stenosis and pheochromocytoma.
  - MRI abdomen will be ordered. On T2 weighted images, hyperintense adrenals are highly suggestive of pheochromocytoma.
  - Meta-iodobenzylguanidine (MIBG—chromaffin-seeking isotope) scan----can find extra-adrenal tumors

- **What is your management plan?**
  - He will be started on I/V nitroprusside (0.5-10μg/kg/min)
  - Blood pressure monitoring will be done every 15minutes.
  - After reducing diastolic blood pressure to 110/120mmHg, intravenous b-blocker esmolol will be given to control heart rate and blood pressure.
  - Phenoxybenzamine (α-blocker) is used before β-blocker to avoid crisis from unopposed α-adrenergic stimulation
  - ECG will be done hourly, to look for tachyarrhythmias.
  - In the long run he needs laparoscopic removal of the tumor. Pre-operatively, the blood pressure control with phenoxybenzamine and propranolol will be done.

- **Symptoms of pheochromocytoma?**

Hyper adrenergic symptoms (5P's)—symptoms are episodic
  - Pressure (↑BP)
  - Pain (headache)
  - Perspiration
  - Palpitations (tachycardia)
  - Pallor

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Jaundice

- 45-year-old male presented with the following blood report, serum bilirubin: 20mg/dL (normal upto 1.2mg/dL), SGPT 80 IU/L (normal upto <20IU/L), serum alkaline phosphatase 1400 IU/L (normal upto 20-100 IU/L), prothrombin time 24s (control 12 s)
- **What is likely diagnosis?** Obstructive jaundice
- **Mention 3 important clinical points?** Itching, clay or muddy colored stool, pain in upper abdomen
- **Investigation?** USG whole abdomen or Hepatobiliary system
- **Causes of this condition?** Ca pancreas, cholangiocarcinoma

✓ Hint: High bilirubin with High Alkaline phosphatase are suggestive of obstructive jaundice

Jaundice

- Refers to yellow discoloration of skin, sclera and mucous membrane
- Usually detectable when plasma bilirubin exceeds 3mg/dl

Unconjugated Hyperbillirubinemia

- 2 types→ Hemolytic jaundice and congenital non hemolytic jaundice
- Hemolytic jaundice:
  - Due to ↑ production of UCB from hemolysis.
  - Caused by: sickle cell anemia, hereditary spherocytosis, hemolytic disease of newborn etc.
- Congenital non-hemolytic anemia:
  - Due to ↓ uptake or conjugation of UCB

Crigler-najjar syndrome-I	Crigler-najjar syndrome-II	Gilbert syndrome:
• Autosomal recessive • UDP-glucoronyl transferase absent • May lead to kernicterus	• Autosomal dominant • UDP-glucoronyl transferase decreased • Mild jaundice, no kernicterus • Treatment= oral phenobarbital	• Autosomal dominant • UDP-glucoronyl transferase decreased • Occurs in adults in response to alcohol, fasting, and strenuous exercise.

Hepatocellular Jaundice

- Due to inability of liver to transport bilirubin into bile, as a consequence of parenchymal liver disease
- Causes mixed hyperbilirubinemia i.e. elevation of both UCB and CB
- In viral hepatitis: ALT>AST, mild elevation of ALP and GGT
- Alcoholic hepatitis: AST>ALT, mild elevation of ALP and GGT

Conjugated Hyperbillirubinemia (Cholestatic (Obstructive) Jaundice)

Decreased intra-hepatic bile flow	Decreased extra hepatic bile flow
• Primary biliary cirrhosis • Autoimmune hepatitis • Congenital conjugated hyperbilirubinemia: 1. **Dubin-johnson syndrome:** Defective bilirubin transport, black liver-due to dark pigment granules deposition 2. **Rotor syndrome:** Same as Dubin-johnson syndrome but no black liver.	• Carcinoma of head of pancreases • Biliary strictures • Choledocholithiasis

Jaundice Lab Findings

- AST is present in mitochondria while ALT is present in cytosol

Unconjugated Hyperbillirubinemia	• AST elevated
Alcoholic hepatitis	Make a toAST with alcohol • AST >>ALT, because alcohol is mitochondrial toxin
Viral hepatitis	• ALT>>AST, because virus causes liver cell necrosis
Obstructive	• Marked elevation of ALP and GGT
Remember	• ↑ ALP + ↑GGT= cholestatic jaundice • ↑ ALP + normal GGT= source other than liver e.g. Bones

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Acute Viral Hepatitis

- **26-year-old male presents with anorexia nausea and repeated vomiting for 3 days. He also mentioned yellow colored urine and pain in right upper abdomen for 2 days, investigation reveals**
  - Hb 14 g/dL, WBCs 3900/mm, polymorphs 46%, lymphocytes 50%, eosinophil 4%.
  - Serum bilirubin 7.2 mg/dL (normal 1.2 mg/dL), SGPT 800 IU/L (normal upto <20IU/L), serum alkaline phosphatase 95 IU/L (normal upto 20-100 IU/L)

- **What is likely diagnosis?** Acute viral hepatitis
- **Mention one investigation that indicates prognosis?** Prothrombin time
- **Mention 2 complications?** Acute fulminating hepatic failure, chronic liver disease

✓ Hint: High bilirubin with High SGPT is suggestive of acute viral hepatitis

Hepatitis

Hepatitis A	Hepatitis B	Hepatitis C	Hepatitis D	Hepatitis E	Alcoholic Hepatitis	Autoimmune Hepatitis
HAV-RNA virus	HBV-DNA virus	HCV-RNA virus	HDV-RNA virus	HEV-RNA virus	Fatty change Focal liver cell necrosis infiltrates of neutrophils intracytoplasmic inclusions (Mallory bodies)	Increased serum immunoglobins and anti-smooth muscle antibodies.
Orofecal route	Parenteral Sexual Vertical (mother to neonate)	Parenteral Sexual Vertical (mother to neonate)	Highest fatality rate	Orofecal route		
No chronic state	Carrier stage	Carrier stage	Association with HBV	Fulminant hepatitis in pregnant women		
No HCC	HCC (major association)	HCC	Incidence ↑ in IV drug users			
	Associated with **Polyarteritis nodosa Aplastic anemia**	Associated with↑ **risk B-cell NHL, ITP, autoimmune hemolytic anemia**				

Serological Patterns of Hep-B

STAGE	HBsAg	HBeAg	Anti-HBc	Anti-HBs
Acute Infection	positive	positive	positive (IgM)	Negative
Chronic Infection	positive	positive	positive (IgG)	negative
Immune From Previous Infection	negative	negative	positive	positive
Immune From Vaccination	negative	negative	negative	positive
Window Period	negative	negative	positive (IgM)	negative

Treatment:

- Supportive (hydration, diet)
- Usually resolves spontaneously
- But if due to hep B OR Hep C---specific treatment should be given
- Indications for hospitalization: encephalopathy, coagulopathy, severe vomiting, hypoglycemia

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Clinical Scenarios

Hemolytic Jaundice

- **20-year-old man presented with high colored urine and yellow coloration of the whole body. There is no history of anorexia, nausea and vomiting, investigation reveals**
  - Hb 8 g/dL, WBCs 6600/mm, polymorphs 65%, lymphocytes 20%, platelet count 18000, ESR 95 in the first hour.
  - Serum bilirubin 3.2 mg/dL (normal 1.2 mg/dL), SGPT 45 IU/L (normal upto <20IU/L), serum alkaline phosphatase 250 IU/L (normal upto 20-100 IU/L)
- **What is likely diagnosis?** Hemolytic jaundice
- **Mention 3 causes?** sickle cell anemia, hereditary spherocytosis, hemolytic disease of newborn etc.
- **Mention 3 important physical findings?** Anemia, jaundice, splenomegaly
- **Mention investigations you would like to run?** Peripheral blood film, Reticulocyte count, Hb electrophoresis, coomb's test

✓ Hint: Anemia with high bilirubin but normal hepatic enzymes (SGPT, ALP) is suggestive of hemolytic anemia

Gilbert Syndrome

- **A young student presented with weakness anorexia nausea and yellow colored urine. He was suffering from sore throat 10 days back. There is history of previous similar attack. On examination he is mild anemic, mild jaundice, liver just palpable and non-tender. Investigation shows**
  - HB 10.2 g/dL, ESR 32 mm in 1st hour, WBCs 9900/mm, polymorphs 61%, lymphocytes 35%, monocytes 4%, retic count 0.7% (normal 0.-2-2%)
  - Total bilirubin 52 µmol/L (normal 17), ALT 15 IU/L (normal upto <20IU/L)
  - Ultrasound of abdomen shows mild hepatomegaly
- What is likely diagnosis? Gilbert syndrome
- What is the treatment? no specific treatment required—symptomatic treatment only

✓ **Hint: Repeated attacks of jaundice in young male with high bilirubin and normal hepatic enzymes is suggestive of Gilbert syndrome**

Raised ALT

- **A previously healthy 30 years old young gentleman was found to have raise ALT (twice, normal) during routine investigations. Repeated LFT's show persistent raised ALT (around twice of normal)**
- **What are the four possible causes for his raised ALT?**
  - Viral hepatitis
  - Wilson's disease.
  - Alcoholic liver disease.
  - Non-alcoholic steatohepatitis (NASH)
- **Name five investigations that you would advise?**
  - Viral serology, Repeat LFT's (Check ALT, AST—to establish a cause)
  - ANA, Anti-SMA, Anti LKM (Anti-liver/kidney microsomal type 1) antibodies for autoimmune hepatitis.
  - Ultrasound abdomen to look at the hepatic echotexture, size and width of biliary channels, portal vein or any evidence of splenomegaly or ascites.
  - Liver biopsy, to look at the degree of inflammation, fibrosis and characteristic histopathological changes of the underlying disorder.
- **What precaution would you tell him before a final diagnosis is reached?**
- The patient will be advised to discontinue alcohol if he is taking it.
- If he is obese then he will be advised to reduce weight,
- He will be asked to avoid hepatotoxic drugs.
- Use of disposable sterilized syringes and screening of blood before transfusion will be advised for the future.
- Screening of the other family members will be done.

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Ulcerative Colitis

- A 27-year-old man presented to accident and emergency department with a history of passage of loose motions for the last 5 days which were mixed with bright red blood and mucus. The frequency of blood was 10-12 day accompanied with fever and abdominal discomfort. There was no drug history. On further questioning he admitted passing loose motions mixed with blood and mucus, occasionally lasting for 2-3 days for the last 6 months but never had such bad attack before. One of his paternal uncles had similar problem but ultimately died of heart attack. On examination, he looked pale, toxic, dehydrated, temperature was 102 F pulse was 120/min, blood pressure was 110/70 mmHg. There was a soft systolic murmur over precordium. Abdomen was tender in left iliac fossa and left flank.
  - Investigations include: Hb 7.8 g/dl (microcytic hypochromic with few tear drop cells), WCC 14.5×109/L (polys 82% Lymphocytes 14% Monocytes 2%, Eosinophils 2%) ESR 86 mm in 1st hour.
  - Sodium 140 mmol /L, potassium 3.8 mmol/L, chloride 98 mmol/L, bicarbonate 24 mmol/L

- **What is the diagnosis?**
  - The most likely diagnosis is ulcerative colitis, as he is a young male patient with history of chronic diarrhea, hematochezia and abdominal pain. He is tender in left half of abdomen indicating predominant colon involvement. There is positive family history and fever, leukocytosis with predominant neutrophils and raised ESR.

- **What is the differential diagnosis?**
  - Crohn's disease, the other spectrum of inflammatory bowel disease.
  - Infective colitis.
  - Ischemic colitis, due to vasculitis.

- **What further investigations would you request?**
  - Abdominal x-ray erect to rule out intestinal perforation, obstruction and toxic megacolon.
  - Stool C/E and culture, to look for evidence of infection.
  - Serum urea and creatinine, to rule out concomitant pre-renal azotemia.
  - Ultrasound abdomen to check for any abscess in the left iliac fossa.
  - Blood grouping and cross-matching, as he might need blood transfusion.
  - Antineutrophil cytoplasmic antibody (ANCA) –Positive in UC, Anti-Saccharomyces cerevisiae antibody (ASCA--- Positive in CD
  - Colonoscopy of the patient will be done after ruling out toxic mega colon and stabilizing the patient. this might show diffuse erythema, erosions, prominent vascular marking and ulcerations.
  - Biopsy of the rectum (as proctitis is always there is U.C).

- **How would you manage such case?**
  - All oral intakes will be discontinued for 24-48 hours.
  - Fluid, electrolyte balance will be maintained with appropriate fluids.
  - He will be transfused 1 pint of whole blood.
  - Methyl prednisolone or hydrocortisone, 300mg will be given intravenously, in divided doses.
  - In-case of no response, I/V cyclosporine will be given after a week of steroid trial.
  - Broad spectrum antibiotics will be given to cover gram negative bacteria and anaerobes.
  - If still the patient deteriorates, surgery will be considered.
  - Steroid will be tapered gradually (5 mg/week), if patient gives satisfactory response.
  - Once stabilized, He'll be maintained on mesalazine, 800mg three times daily or azathioprine
  - Regular follow-up will be maintained, with repeat colonoscopies every 2-3 years, until 8-10 years and then yearly colonoscopy to keep a check for the development of dysplasia/ colonic carcinoma.

- **Side effect of drugs used?**
  - Azathioprine-----Pancytopenia, Pancreatitis
  - Steroids----- Cushing syndrome, osteoporosis, hyperglycemia, diabetes, amenorrhea,
  - Aminosalicylates--- headache, nausea and abdominal pain, hemolysis

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	Ulcerative Colitis	Crohn's disease
Definition	❖ A chronic inflammatory disease that is characterized by inflammation and can involve colon only	❖ A chronic inflammatory disease, that can involve entire gut- from mouth to anus— **but rectum generally spared**
Epidemiology	❖ Males and females appear equally affected ❖ **Smoking has protective effect**	❖ Female > male ❖ **Strong association with smoking**
Features	❖ Inflammation limited to mucosa and submucosal ❖ **No skip lesions** ❖ No granulomas ❖ **Crypt abscess** ❖ Psuedopolyps	❖ **Transmural inflammation** ❖ **Rose thorn ulcers** ❖ **Skip lesions** due to discontinuous spread ❖ **Non-caseating Granulomas** ❖ Regular abscess ❖ **Cobble-stone appearance**
Clinical features	❖ Malaise, fever, weight loss----- Sometimes ❖ Rectal bleeding ---Nearly always	❖ Malaise, fever, weight loss---- Common ❖ Rectal bleeding -----Sometimes ❖ **Abdominal mass palpable in RIF**
Extra intestinal manifestation and Complications	Mnemonic: **U-PAST-Colitis** ❖ Uveitis ❖ Pyoderma gangrenosum ❖ Arthritis (most common overall) Ankylosing spondylitis ❖ Primary Sclerosing cholangitis ❖ Toxic megacolon ❖ Colon carcinoma	Mnemonic: **PIE SAC** ❖ Per anal disease ----Anal fissure, anal **fistulas** ❖ Erythema nodosum ❖ Strictures ❖ Aphthous ulcers, Arthritis (most common overall) ❖ Calcium oxalate stones ----renal stones
Radiography	❖ Lead pipe appearance	❖ String sign
Investigation	❖ Serological testing o Antineutrophil cytoplasmic antibody (ANCA) –Positive in UC ❖ Colonoscopy with biopsies confirms the diagnosis	❖ Serological testing o Anti-Saccharomyces cerevisiae antibody (ASCA--- Positive in CD ❖ Colonoscopy with biopsies confirms the diagnosis
Treatment	**Inducing remission:** o **Rectal (topical) aminosalicylates or steroids:** ✓ For distal colitis rectal mesalazine has been shown to be superior to rectal steroids and oral aminosalicylates o **Oral aminosalicylates** o **Oral prednisolone** ✓ It is usually used **second-line** for patients who fail to respond to aminosalicylates. ✓ NICE recommend waiting around 4 weeks before deciding if first-line treatment has failed o Severe colitis (>6 bloody stooly/day) ✓ should be treated in hospital ✓ Intravenous steroids are usually given first-line **Maintaining remission** o Oral aminosalicylates e.g. Mesalazine o Azathioprine and mercaptopurine ✓ Methotrexate is not recommended for the management of UC (in contrast to Crohn's disease)	**Inducing remission:** o **Glucocorticoids** o **5-ASA drugs (e.g. mesalazine)—2nd -line to glucocorticoids** o **Azathioprine or mercaptopurine** ✓ May be used as an add-on medication to induce remission but is not used as monotherapy ✓ Methotrexate is an alternative to azathioprine o **Infliximab** ✓ Is useful in refractory disease and fistulating Crohn's o **Metronidazole** is often used for isolated peri-anal disease **Maintaining remission:** ❖ Stopping smoking ❖ Azathioprine or mercaptopurine is used first-line to maintain remission ❖ Methotrexate is used second-line ❖ 5-ASA drugs (e.g. mesalazine) should be considered if a patient has had previous surgery

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Aplastic Anemia

- **A 52 years old socially active lady started to feel undue tiredness for the last three months. She attributed this to overwork and decided to cut down on her activities. One months ago, she started to get breathlessness and consulted a doctor who ordered a chest x-ray and ECG. These were normal and she was reassured. One-week ago she started to bleed from gums and noticed some spots on her legs. In the past she had typhoid 2 years previously. She takes analgesics for her headaches. On examination; bruises on legs were noticed. Auscultation of heart revealed a grade II mid systolic murmur. Liver and spleen not palpable.**
  - Investigations: Hb 5 g/dL, TLC 1800 with 19% polys. ESR 76 mm/1st hour. Urea 5.6 mmol/L, glucose 6 mmol/L.

- **What is the likely diagnosis?** Aplastic anemia

- **What other points would you like to elaborate in the history?**
  - History of fever, cough, sputum, chest pain, burning micturition, pain abdomen (evidence of infection in body)
  - History of bleeding from any other site.
  - Bone pains.
  - History of drug intake.
  - History of radiation exposure.
  - History of exposure to insecticide.
  - History of exposure to other chemical agents.
  - History of joint pain, skin rash.
  - Family history of similar disorder.

- **What investigations will you carry out?**
  - Platelet count.
  - Peripheral smear to look for leucoerythroblastic picture in case of marrow infiltration.
  - USG abdomen to rule out hepatosplenomegaly/intra-abdominal lymph nodes.
  - Bone marrow examination.
  - Bone marrow trephine biopsy will reveal hypo cellular marrow with no abnormal cells.

- **Discuss the management of this patient.**
  - For this 52-year-old patient, the treatment of choice is immunosuppression with anti-thymocyte globulin in combination with cyclosporine.
  - Prednisolone is given with ATG to avoid serum sickness.
  - In case of no response allogenic bone marrow transplantation from non-HLA matched sibling will be considered. If no suitable bone marrow donor is available the high dose cyclophosphamide will be used to induce remission.
  - Meanwhile, patient will be given blood transfusions, platelet concentrate depending on platelet counts and antibiotics in case of infection.

✓ Hint: Pancytopenia, bruising + Bleeding with no hepatosplenomegaly= Aplastic anemia

Aplastic Anemia

Causes	❖ Fanconi's anemia, Chemotherapeutics, chloramphenicol, Benzene/organic solvents, Ionizing Radiation, Parvovirus B19, EBV, HIV, **PNH**
Treatment	❖ **For Patients Under the Age Of 40 With An HLA-Identical Sibling** ○ Bone marrow transplantation is the treatment of choice ❖ **For Adults Over Age 40 Years or Those Without HLA-Matched Hematopoietic Stem Cell Donors** ○ Immunosuppression with antithymocyte globulin (ATG) plus cyclosporine. ○ A proven regimen is equine ATG 40 mg/kg/day intravenously for 4 days in combination with cyclosporine, 6 mg/kg orally twice daily. ❖ **Response to Treatment** ○ Response to ATG does not usually begin to occur before 3-4 months, so red cell and platelet transfusions will need to be continued as needed until the peripheral blood counts start to improve. Continue oral prophylactic antibiotics and antifungals while the patient is severely Neutropenic. ○ A second course of ATG should be commenced if there is no response or relapse after the first course. This should not be given earlier than 3 months after the first course as it usually takes around 3 months before a response is seen.

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Acute Leukemia

- A 25-year-old male presents with low grade fever, with HB 6 g/dL, WBCs 50,000 with atypical cells 29%, neutrophil 35%, lymphocyte 28%, monocyte 03%, eosinophils 05%, platelets 100.
- **What is your likely diagnosis?** acute leukemia
- **Investigation?** Bone marrow biopsy, retic count.
  - ✓ Hint: Atypical cells with increased WBC count is likely acute leukemia

Acute Lymphoblastic Leukemia (ALL)	Acute Myelogenous Leukemia (AML)
❖ ALL is the **most common malignancy in children.**	❖ AML occurs most often in adults.
❖ ↑↑ Lymphoblast's (B or T-cell lymphocytes)	❖ A predominance of myeloblasts and early promyelocytes is characteristic.
❖ Lymphoblasts have **agranular cytoplasm** (granular in AML)	❖ Myeloblasts have **granular cytoplasm and stain positive with MPO.**
❖ Features: o Bone pain and tenderness, lymphadenopathy, spleen and liver enlargement o **May spread to CNS** (cranial neuropathies, vomiting) and testes. o T-cell ALL can present as mediastinal mass (presenting as **SVC-like syndrome**).	❖ Features: o Gingival hyperplasia o Auer rods→fused azurophilic granules in cytoplasm of myeloblasts o Total 8 subtypes; FAB classification (see FAB table below)
❖ ALL is the form of acute leukemia that is **most responsive to therapy**	❖ AML responds to current therapy more poorly than ALL
❖ Associated with **Down syndrome**	
❖ Treatment o **Induction chemo**: combination of Anthracyclines, vincristine, steroids, cyclophosphamide, ± asparaginase o Ph ⊕ t(9;22)---Add tyrosine kinase inhibitors such as Imatinib o **CNS prophylaxis**: intrathecal MTX/cytarabine o **Post remission therapy→** consolidation/intensification chemo (7 months) followed by maintenance chemo (2–3 y) o If relapse → allogeneic HSCT if available	❖ Treatment o 3 + 7 treatment o 3 days Anthracyclines (daunorubicin or idarubicin) plus 7 days cytarabine o Once patient enter remission, f/up with consolidation therapy o If patient doesn't responded to initial therapy have cure rates of less than 10% with chemotherapy alone and are referred for allogeneic stem cell transplantation.
❖ Good prognostic factors: • Younger age • WBC <50 × 109/L for B-lineage <100 × 109/L for T-lineage • Absence of **Philadelphia chromosome** • **t (12;21) → better prognosis**	

FAB subtype	Name
MO	Undifferentiated acute myeloblastic leukemia
M1	Acute myeloblastic leukemia with minimal maturation
M2	Acute myeloblastic leukemia with maturation
M3	Acute promyelocytic leukemia (APL)
M4	Acute myelomonocytic leukemia
M5	Acute monocytic leukemia
M6	Acute erythroid leukemia
M7	Acute megakaryoblastic leukemia

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Chronic Myelogenous Leukemia (CML)

- **A 53-year-old male is a diagnosed case of chronic myeloid leukemia previously treated with chemotherapy- and responded well. After 3 years he presented again with complains of weakness, epistaxis, lethargy and pain in left upper abdomen, investigation reveals**
  - HB 7.5g/dL, WBC 12,800, platelets 100,000, ESR 85mm, neutrophils 34%, basophil 8%, lymphocyte 6%, myeloblast 40%, myelocyte 10%, metamyelocyte 2%.

- **What is likely diagnosis?** Blastic crisis in CML
- **What is the cause of abdominal pain?** Splenic infarction

✓ Hint: Blast cells increased in CML suggestive of transformation to Blastic crisis in CML

Chronic Lymphocytic Leukemia (CLL) /Small Lymphocytic Lymphoma (SLL)	Chronic Myelogenous Leukemia (CML)
❖ CLL **most common overall leukemia**, old age> 60 years ❖ ↑normal appearing B-lymphocytes that function abnormally. ❖ Most common cause of generalized lymphadenopathy ❖ **Associated with Autoimmune hemolytic anemia →spherocytes**	❖ Clonal overproduction of hematopoietic myeloid cell that can differentiate ❖ CML is a disorder of middle age (median age at presentation is 55 years). ❖ Patients usually complain of **fatigue, night sweats, and low-grade fevers** (in absence of any infectious disease)
❖ Richter's syndrome: o Transformation of CLL into more aggressive form, takes the form of diffuse large B-cell lymphoma	❖ Blast crisis: o Most common cause of death o Characterized by transformation to acute leukemia o It transform to AML in 70% cases→poor prognosis o It transform to ALL in 30% cases→good prognosis
❖ Lab o **CBC peripheral smear (Lymphocytosis)** o **Smudge cells** (parachute cells): fragile leukemic cells seen in CLL (lab artefact)	❖ Lab o **CBC peripheral smear (Basophilia)** • Increased numbers of blasts are suggestive of accelerated phase or blast crisis. o **↓ LAP (leukocyte alkaline phosphatase)** o **ABL-BCR required for diagnosis**
❖ Cytogenetic and immunohistochemistry o CD5, CD19 and CD20→positive o **CD10→negative**	❖ Cytogenetics o **Philadelphia chromose t (9:22) always present (95%).** o **Absence of Philadelphia chromosome→poor prognosis**
❖ **Treatment:** • Mnemonic **FCR**--- Fludarabine + Cyclophosphamide+ Rituximab	❖ **Treatment:** ❖ Symptomatic Rx • Allopurinol and antihistamines ❖ Chronic phase • TKI's 1st generation→Imatinib • If loss of response or intolerance (~40%), trial of 2nd generation TKIs: dasatinib or nilotinib • Hydroxyurea in palliative setting to reduce WBC (leukostasis effects) ❖ Accelerated phase or blast phase • Refer for clinical trial or 2nd/3rd generation TKI and prepare for allogeneic stem cell transplant

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Polycythemia Rubra Vera

- **A 41-year-old male presents with frequent headache, dizziness and lack of concentration, pruritic and heaviness in left upper abdomen for 3 months. Laboratory investigation reveals**
  - Hb 17.6 g/dL, WBCs 21,000, polymorphs 83%, lymphocytes 15%. Eosinophils 2%, platelets 850,000
  - PCV (Packed Cell Volume): 65% (Normal upto 45%), RBS normal chest x-ray normal
- **What is your likely diagnosis?** Polycythemia rubra vera
  - ✓ Hint: High HB + High PCV or Hematocrit is suggestive pf polycythemia rubra vera

Polycythemia

- Polycythemia (or erythrocytosis) is defined as an increase in hemoglobin, Hematocrit (best indicator) and red cell count

Type	Explanation
Primary Polycythemia	**Polycythemia Rubra Vera** • Stem cell disorder characterized by elevated RBC mass (erythrocytosis) ± increased white cell and Platelet production • Diagnosis (WHO criteria) requires ○ Presence of both major criteria and one minor criterion "OR" ○ The presence of the first major criterion together with two minor criteria.

Major Criteria	Minor Criteria
1. Haemoglobin >18.5 g/dl in men, 16.5 g/dl in women or other evidence of increased red cell volume 2. Presence of JAK2 mutation	1. Bone marrow biopsy showing hypercellularity for age with trilineage myeloproliferation 2. Serum erythropoietin level below the reference range for normal 3. Endogenous erythroid colony formation in vitro

- **Clinical features:**
  - Thrombotic complications such as MI, stroke, PE, DVT→ due to thrombocytosis (PLT> 400 ×10^{9}) and hypervisocisty (erythrocytosis)
  - Erythromelalgia (severe, burning pain and red-blue coloration) due to episodic blood clots in vessels of the extremities.
  - ↑ Histamine from basophils→ itching after hot bath, PUD.
  - Gout (Hyperuricemia) → due to increased cell turnover
  - **Spleenomegaly**
  - Most Common Symptoms (Mnemonic **PRV**):
    - **P**lethora/ **P**ruritis
    - **R**inging in ears
    - **V**isual blurriness
- **Labs:**
  - HCT > 54% in males or 51% in females
  - WBC's or PLT high or normal
  - EPO (Erythropoietin) levels are suppressed and are usually low.
  - JAK2 (Janus kinase 2) mutation positive
  - Bone marrow – hypercellular
  - Vitamin B12 levels are strikingly elevated because of increased levels of Transcobalamin III (secreted by white blood cells).
- **Treatment:**
  - Phlebotomy (Venesection) 400-500 mL weekly to keep hematocrit <45%
  - Hydroxyurea
    - Used in patients with Prior thrombosis or symptoms, severe coronary artery disease, refractory to phlebotomy
  - JAK2 inhibitors (Ruxolitinib)
    - For patients resistant or intolerant to hydroxyurea.
  - Aspirin 75 mg daily (for antithrombotic prophylaxis, will also treat erythromelalgia
  - Allopurinol

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	○ Antihistamines: as needed ❖ **Prognosis:** ○ Median survival if treated is 9–12 y ○ Transition to myelofibrosis occurs in ~30% or acute leukaemia in ~5%. ○ Monitor FBC every 3 months.
Secondary Polycythemia	❖ Causes: ○ Hypoxia→ cardiac disease, pulmonary disease, high altitude ○ Carboxyhemoglobin: smoking ○ Kidney lesions ○ Erythropoietin-secreting tumors (rare) ○ Abnormal hemoglobin's (rare) ○ Diuretics use ❖ A secondary cause of polycythemia should be suspected if splenomegaly is absent and the high hematocrit is not accompanied by increases in other cell lines. ❖ Treat underlying cause ○ O2 for hypoxemia, CPAP for sleep apnea, surgery for EPO-secreting tumors
'Relative' or 'apparent' Polycythaemia (Gaisböck's syndrome)	❖ 'Stress-induced, burns or dehydration ❖ The red cell volume is normal, but as the result of a decreased plasma volume, there is a relative Polycythaemia. ❖ More common than PV and occurs in middle-aged men, particularly in smokers who are obese and hypertensive. ❖ Treatment: ○ Venesect the patient. Smoking should be stopped

Polycythemia Rubra Vera

A 60 years old male presented emergency with right side weakness of one-week duration and blurring of vision in both eyes for 1 day. On examination he has a plethoric appearance with signs of upper motor neurons lesion on right side. Fundoscopy revealed dilated retinal veins. His hemoglobin is 19.4 g/dL. Renal function, lipid profile and LFT's were normal.

What is the diagnosis and what is the pathogenesis of his eye lesions?

- The diagnosis is polycythemia. This condition is more common in males.
- Patient has signs and symptoms of hyper viscosity and hypercoagulability (retinal vein thrombosis and cerebral infarct).
- He has plethoric appearance.
- He has raised hemoglobin (19.4 g/dL).

- Pathogenesis of Eye Lesion: Due to hyperviscosity

List five renal causes of this condition?

- Hypernephroma
- Polycystic Kidney disease.
- Wilms tumor.
- Hydronephrosis.
- Renal transplantation.

List five lab tests which you will order in this patient?

- Pack cell volume, more than 55% is diagnostic to rule out spurious polycythemia.
- White cell count and platelets counts; raised in case of polycythemia rubra vera.
- CT head; to document cerebral infarct.
- Arterial blood gases, to look for hypoxia, an important cause of secondary polycythemia.
- Renal CT scan; to rule out renal cause of polycythemia.

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Clinical Scenarios

Multiple Myeloma

✚ A 60 years old woman presented with a 6 months history of general ill health, constipation, and backache, difficulty in walking, dizzy spells and sore eyes. The patient gave past history of falling in the bathroom after a dizzy spell one year back and of recurrent attacks of pain in the flanks for the past 18 months. Washing hands with cold weather wakes her very uncomfortable. Examination reveals a pleasant educated lady who looks slightly pale. She has a temperature of 99oF, her eyes are red looking, B.P is 160/90 mmHg. Her pulse is 80/min and a soft systolic murmur is audible at the left sternal edge. She has brown looking painless skin lesions on the tip of her big toes bilaterally. Wasting of the thigh but the ankle and knee jerks are brisk and her planters seem to be upgoing. She can walk, through with some difficulty. A few exudates are visible in both discs. A soft spleen is 2cm palpable. She has hemoglobin of 10mg, TLC of 3500 with a normal differential count and an ESR of 80mm in the first hour, Urine shows++ proteins. vertebral column seems to be osteoporosis, and T8 vertebra is partially collapsed.

✚ **What is the most likely diagnosis?**

- The most likely diagnosis is multiple myeloma. The reasons for making diagnosis include:
- Dizzy spells due to hyper viscosity, anemia.
- Pain in flanks due to renal stones.
- Brown, painless skin lesions, tophi, due to hyperuricemia.
- UMN type of paraplegia due to vertebral column involved, confirmed on x-rays.
- Spine, which show osteoporotic spine with partially collapsed T8 vertebra.
- Complete blood count showing anemia, leucopenia.
- Raised ESR.
- Proteinuria and splenomegaly, indicating amyloidosis.
- All these features favor the diagnosis of multiple myeloma.

✚ **Give three differential diagnosis and rationale for each?**

- Secondary deposits in the bones/ Metastatic disorder, as suggested by:
  - ✓ Elderly lady with 6months of general ill health. Backache constipation.
  - ✓ UMN paraplegia
  - ✓ Raised ESR, anemia.
  - ✓ Partially collapsed T8 vertebra,
- Other malignant lymph proliferative disorder (lymphoma, Waldenstrom's macroglobulinemia as suggested by:
  - ✓ Elderly lady with chronic ill heath, backache and symptoms of hyperviscosity (dizziness).
  - ✓ Skin lesions of hyperuricemia.
  - ✓ Splenomegaly.
  - ✓ Anemia, leucopenia, raised ESR.
- Tuberculosis spine (Potts disease):
  - ✓ Chronic ill—health
  - ✓ Backache, constipation
  - ✓ UMN paraplegia with collapsed T8 vertebrate.
  - ✓ Anemia, raised ESR.

✚ **What investigations would you do to confirm the diagnosis? Give the finding that you will expect in these investigations?**

- Blood film examination may show rouleaux formation due to paraproteins.
- Serum protein electrophoresis shows a monoclonal spike in the beta or gamma globulin region. This is hallmark of multiple myeloma: due to raised paraproteins, 60% of patients have IgG paraprotein.
- Urea and electrolytes show evidence of renal failure.
- Serum β2—macroglobulin, > 2.5 gm/dl, is a useful prognostic marker.
- Raised serum LDH, useful in prognosis.
- Serum albumin, usually low.
- Serum uric acid, will be raised.
- Skeletal survey, may show characteristic lytic lesions, mostly in the skull, spine, ribs and proximal long bone.
- 24-hour urine immunofixation, may show the presence of light chains.
- Bone marrow aspirate or trephine, will show characteristic infiltration with plasma cells.
- Renal biopsy may be requested to confirm amyloidosis.

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Idiopathic Thrombocytopenic Purpura

- **9 days after recovering from a viral infection, 13-year-old girl presents with several small bruises on her arms and legs, investigation shows**
  - HB 13 g/dL, WBCs 10,700, polymorphs 59%, lymphocytes 38%, platelet count 80,000, chest x ray normal
- **What is your likely diagnosis?** ITP
  - ✓ Hint: low platelets + purpuric rash after a viral infection, with other cell lines normal is suggestive of ITP

Immune Thrombocytopenia

- ITP is an autoimmune condition
- ITP is mediated by autoantibodies, most often directed against the platelet membrane glycoprotein IIb/IIIa, which sensitise the platelet, resulting in premature removal from the circulation by cells of the reticuloendothelial system in which pathogenic antibodies bind platelets, accelerating their clearance from the circulation.

	Childhood ITP	Adult ITP
Peak Age	❖ 2-6 yr.	❖ 20-40 yr.
Gender	❖ None	❖ F>M (3:1)
History	❖ Recent viral infection, including varicella zoster or measles.	❖ Mostly idiopathic, although it can be associated with o connective tissue disease (such as SLE), o lymphoproliferative disease (such as lymphoma), o Medications, o Infections (such as hepatitis C virus and HIV infections). ▪ HCV--- cirrhosis-related splenomegaly ▪ HIV--- direct suppression of platelet production
Spontaneous Remissions	❖ 80% or more	❖ Uncommon

- **Terminology of ITP**
  - Primary: isolated thrombocytopenia (platelet count <100x109/L) with no other cause of thrombocytopenia
  - Secondary: thrombocytopenia associated with another condition (e.g. HIV, HCV, SLE, CLL)
  - Drug-induced: drug-dependent platelet antibodies causing platelet destruction
    - Mnemonic: **HANDER**
      - **H**eparin, **A**cetaminophen, **A**miodarone, **A**mphotericin B, H2-**A**ntagonists, **N**SAIDs , **E**thambutol, **R**ifampicin

- **Classification of primary ITP**
  - Acute: newly diagnosed (diagnosis to 3 months)
  - Persistent: 3-12 months from diagnosis
  - Chronic: >12 months
  - Refractory: post-splenectomy
- **Clinical Presentation**
  - Easy bruising, purpura, epistaxis and menorrhagia are common when PLT < 20,000 -30,000
  - Physical examination is normal except for evidence of bleeding.
  - **Splenomegaly is rare.**

- **Investigations**
  - CBC---- isolated ↓PLT (100,000/ L); (10% have ITP + AIHA called **Evans syndrome**)
  - PT and aPTT: normal
  - Peripheral blood film: decreased platelets, giant platelets (rule out platelet clumping)

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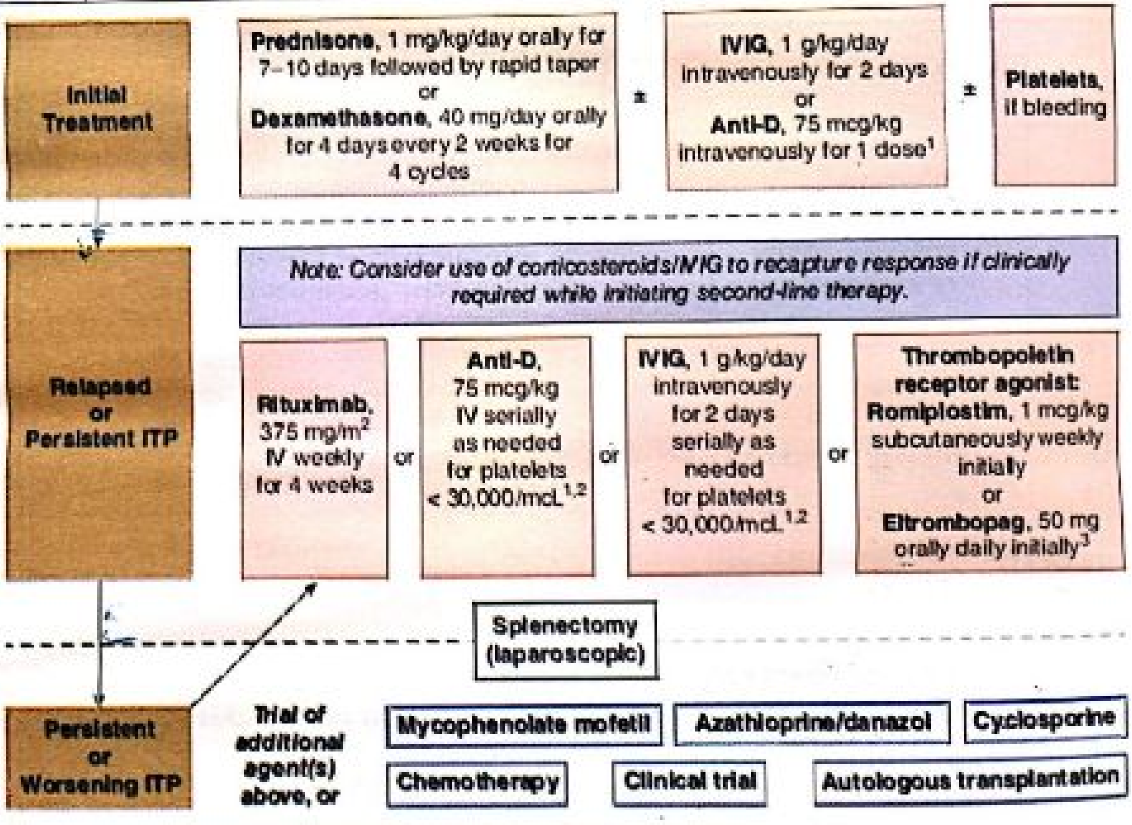
Clinical Scenarios

- Bone marrow aspirate and biopsy
  - Recommended in patients >60 yr. of age (to r/o myelodysplasia, infiltration)
  - Failed traditional ITP therapy
- Rule out other etiologies:
  - Viral serologies (HIV, HCV, HBV, EBV),
  - H. pylori Ab.
  - ANA.
  - Pregnancy test,
  - TSH
  - **Anti-PLT Ab. tests not useful.**

❖ **Treatment**

- Rarely indicated if platelets >30 x 10^9/L unless active bleeding, trauma, or surgery

Emergency Treatment (CNS bleed, GI bleed, emergency surgery)	❖ Stop offending drug if any ❖ Corticosteroids: Prednisone (1 mg/kg) or Dexamethasone (40 mg PO x 4 d) ❖ Antifibrinolytic: Tranexamic acid (1 g PO TID or 1 g IV q6h) ❖ Platelet transfusion



[1]Use in non-splenectomized, Rh blood type–positive, non-anemic patients only.
[2]May need to repeat infusion every 2–6 weeks to maintain platelet response.
[3]Recommended starting dose in Asians is 25 mg daily.

❖ **Definitions of response to treatment**

- Complete response: platelet >100
- Partial response: platelet 30-100
- No response: platelet <30

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HUS vs. TTP

Thrombotic thrombocytopenic purpura (TTP) & Hemolytic-uremic Syndrome (HUS)

	Thrombotic thrombocytopenic purpura (TTP)	Hemolytic-uremic syndrome (HUS)
Definition	Vascular occlusive disorders w/ systemic (TTP) or intrarenal (HUS) PLT aggregates leading to thrombocytopenia & mechanical injury to RBC's	
Epidemiology	❖ Predominantly adult	❖ Predominantly children and elderly
Etiology	❖ Deficiency of von Willebrand factor (vWF) metalloprotease (ADAMTS 13). ❖ Insufficient ADAMTS-13 activity allows vWF multimers to accumulate in microcirculation which leads to platelet aggregation/thrombocytopenia and hemolysis of RBCs	❖ Shiga toxin (**E. coli serotype O157:H7, Shigella dysentry**) in 90% ❖ Some cases: heritable deficiency in function of complement regulatory proteins
Clinical Features	❖ TTP ----**PENTAD** ○ Thrombocytopenia ○ MAHA (microangipathic hemolytic anemia) ○ Neurological symptoms: headache, confusion, focal defects, seizures ○ Renal failure ○ Fever	❖ HUS---- **TRIAD** ○ Thrombocytopenia ○ MAHA ○ Renal failure **(more marked in HUS)**
Investigations (both TTP & HUS)	❖ CBC and blood film ----decreased platelets and schistocytes ❖ **PT, aPTT, fibrinogen ---- normal** ❖ Markers of hemolysis---increased unconjugated bilirubin, increased LDH, decreased haptoglobin ❖ **Negative Coombs test** ❖ Creatinine, urea, to follow renal function ❖ Specific for HUS ○ Stool culture OR Stool assays for E coli ❖ Specific for TTP ○ Reductions in ADAMTS-13 activity	
Treatment	❖ Medical emergency ❖ **Plasma exchange ± steroids (is the mainstay of the treatment)** ❖ **Platelet transfusion avoided** unless life-threatening bleed (because associated with Inc. risk of microvascular thrombosis) ❖ Platelet transfusions may be given slowly if life threating bleeding and if plasma exchange is underway. ❖ Red blood cell transfusions may be administered in cases of clinically significant anemia ❖ Hemodialysis should be considered for patients with significant kidney disease ❖ Cryoprecipitate and FFP (fresh frozen plasma) both contain ADAMTS-13.and transfused it if plasmapheresis is not immediately available ❖ TTP mortality ~90% if untreated ❖ Plasma exchange usually is administered ❖ Once daily until the platelet count and LD have returned to normal for at least 2 days, after which the frequency of treatments may be tapered slowly. ❖ Disease activity & relapse is monitored by measuring the platelet count and serum LDH. ❖ TTP relapse following initial treatment, ○ Plasma exchange should be reinstituted. ○ If ineffective, second-line treatments Includes ➤ **Rituximab** corticosteroids, IVIG, vincristine, cyclophosphamide, and splenectomy.	❖ Supportive therapy (fluids, RBC transfusion, nutrition, etc.) ❖ Some evidence for plasma exchange ❖ Dialysis ❖ **Eculizumab** ○ is a humanized monoclonal antibody that binds to complement protein C5, blocking its cleavage into C5aand the cytotoxic membrane attack complex C5b-9, thus inhibiting complement activation ❖ **Neisseria meningitides vaccination must be performed before starting Eculizumab.**

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Thrombotic Thrombocytopenic Purpura (TTP)

- **A 22 years old female presents with confusion, oliguria and melena, she developed fever, arthralgia and abdominal pain one week back. On examination she was confused and had pallor, jaundice and petechial rash. Her chest examination showed left sided facial palsy. Her investigation showed**
  - Hb 8.0 g/dL, TLC 10,000, platelets 95,000
  - Bilirubin 3.2mg/dl, ALT 40 I/U.
  - Peripheral film showed fragmented RBC's and increased reticulocytes.
  - Urine examination showed mild proteinuria and BUN was 60 mg/dl .
  - Her PT and APTT were normal

- **What is the most likely diagnosis?**
  - The most likely diagnosis is thrombotic thrombocytopenic purpura as she has:
    - CNS symptoms (confusion, left sided facial palsy)
    - Renal involvement (oliguria, mild proteinuria, deranged renal function tests)
    - Microangiopathic hemolytic anemia (decreased Hb, fragmented RBC and increased reticulocytes on peripheral smear)
    - Thrombocytopenia (melena, petechial rash, platelet count 95,000).

- **Give three likely differential diagnosis you would consider?**
  - Hemolytic uremic syndrome (microangiopathic hemolytic anemia, thrombocytopenia, prominent renal impairment, CNS involvement is less likely).
  - Disseminated intravascular coagulation (microangiopathic hemolytic anemia, thrombocytopenia, but PT and APTT are prolonged)
  - Vasculitis (young female patient with arthralgia, microangiopathic hemolytic anemia, thrombocytopenia, renal and neurological impairment)

- **What other investigation would you carry out?**
  - Direct and indirect bilirubin (indirect bilirubin will be elevated as compared to direct bilirubin)
  - Serum LDH (will be markedly elevated)
  - Coomb's test (will be negative).
  - Serum fibrinogen (will be normal)
  - Fibrin degradation products (usually not elevated).
  - Absent or reduced levels of ADAMTS-13
  - Renal biopsy, may show thrombosis of capillaries and small arteries, associated renal cortical inflammation and infarction; more prominent in HUS, as compared to TTP

- **How will you treat this case?**
  - Plasma exchange ± steroids (is the mainstay of the treatment)
  - Platelet transfusion avoided unless life-threatening bleed (because associated with Inc. risk of microvascular thrombosis)
  - Red blood cell transfusions may be administered in cases of clinically significant anemia
  - Hemodialysis should be considered for patients with significant kidney disease
  - Cryoprecipitate and FFP (fresh frozen plasma) both contain ADAMTS-13.and transfused it if plasmapheresis is not immediately available
  - TTP relapse following initial treatment,
    - Plasma exchange should be reinstituted.
    - If ineffective, second-line treatments Includes Rituximab corticosteroids, IVIG, vincristine, cyclophosphamide, and splenectomy.

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Hemolytic-Uremic Syndrome (HUS)

- **A young lady with postpartum fever for one week presented in emergency department with H/O bleeding from various sites and oliguria. On examination she is anemic with cutaneous bleeding and mildly jaundiced. There is no hepatosplenomegaly. Investigation revealed**
  - Hb: 8.0 gm/dl, TLC 6000
  - Bilirubin 3mg/dL with direct bilirubin 1 mg/dL, ALT 100 IU, LDH 1230 IU
  - Serological test for B, C and E are negative, her blood urea is 200mg/dL.
- **What is the most likely diagnosis?**
  - The most likely diagnosis is hemolytic uremic syndrome.
  - This is indicated by postpartum fever, oliguria, bleeding from various sites, raised bilirubin due to hemolysis, raised blood urea and LDH levels.
  - It causes microangiopathic hemolytic anemia, uremia and thrombocytopenia.
- **List the lab abnormalities in this condition?**
  - Platelet count: will be low.
  - Fragmented RBC's will be seen on peripheral blood smear. Low hemoglobin.
  - Raised blood urea and creatinine.
  - Raised LDH.
  - Indirect hyperbilirubinemia.
- **What are treatment options?**
  - Supportive therapy (fluids, RBC transfusion, nutrition, etc.)
  - Some evidence for plasma exchange
  - Dialysis
  - Eculizumab

Anemia

- **17-year-old girl is admitted with increasing fatigue and pallor for 3 months. There is no history of chronic blood loss. She has not taken any medicine. On examination, she is markedly pale, with hepatosplenomegaly, her investigations Shows**
  - Hb 8.0 gm/dl, normal MCV and normal TLC, DLC and platelet count.
- **What are possible causes of her anemia?**
  - Lymphoreticular disorder e.g. lymphoma.
  - Aleukemic leukemia.
  - Hemolytic anemia, which could be either due to intrinsic defect (hereditary spherocytosis) or extrinsic defect (autoimmune hemolytic anemia).
  - Chronic liver disease.
  - Disseminated tuberculosis.
- **Investigations:**
  - Peripheral blood smear, may show blast cells (leukemia) , leucoerythroblastic picture (bone marrow) infiltration due to lymphoma, leukemia), spherocytosis, elliptocytes, fragmented RBC's.
  - Chest X-ray may show hilar/ mediastinal adenopathy due to lymphoma or tuberculosis. Chest X-ray may also show upper lobe consolidation, cavitation or fibrosis due to tuberculosis.
  - Bone marrow aspiration and biopsy will be done to confirm the causes of anemia. It will show the exact cause of her pallor.
  - Reticulocyte count, will be elevated in case of hemolytic anemia, while conditions causing bone marrow suppression leads to low reticulocyte count.
  - Ultrasound abdomen to look at the texture, size of liver spleen and portal vein. It may show intra-abdominal lymph nodes, ileocecal mass due to tuberculosis or ascites, which may be due to tuberculosis, liver disease or lymphoma.

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Disseminated Intravascular Coagulation (DIC)

- **A 30-year-old woman was admitted in the hospital with the complaints of per vaginal bleed and high-grade continuous fever after abortion, she looks toxic, severe anemia, BP 80/60 mmHg, pulse 124/min, temperature 39.6 centigrade, tender lower abdomen, investigation reveals**
  - HB 5 g/dL, WBCs 28,700, polymorphs 87%, lymphocytes 13%, platelets 30000, ESR 85 mm
  - Microcytic hypochromic and fragmented RBC
  - Prothrombin time 30 sec (control 12 s), APTT 60s (control 32), Fibrinogen 0.05 g/L
- **What is likely diagnosis?** Disseminated intravascular coagulation (DIC)
  - ✓ **Hint: Abortion + Inc PT, Inc aPTT + Dec platelets = DIC**

Disseminated Intravascular Coagulation (DIC)

Definition	❖ Excessive, dysregulated release of plasmin and thrombin leading to intravascular coagulation and depletion of platelets, coagulation factors and fibrinogen ❖ Risk of life-threatening hemorrhage or thromboembolism
Etiology	❖ Occurs as a complication of many other severe medical, surgical or obstetrical conditions
Investigations	❖ Decreased platelets ❖ Prolonged INR (PT), aPTT, decreased fibrinogen and other factors ❖ Increased FDPs or D-dimers ❖ RBC fragmentation
Treatment	❖ Recognize early and treat underlying disorder ❖ Supportive measures: hemodynamic and/or ventilator support, aggressive hydration, RBC transfusion if severe bleed ❖ Replacement of haemostatic elements with platelet transfusion, frozen plasma, cryoprecipitate ❖ British Haematology Guidelines: ○ maintain platelets >50 x10^9, Hemoglobin >8 g/dL, and avoid hypothermia ○ 4-5 units of FFP if INR >1.5 or aPTT >38 ○ 10 units of cryoprecipitate if fibrinogen <1 g/L ❖ In thrombotic phase: UFH or LMWH in critically ill, non-bleeding patients

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Meningitis

- **A 25-year-old male presented with fever for 3 weeks and disorientation for 3 days, CSF study done which shows**
  - CSF pressure: High---Color: Clear----- WBCs 350, neutrophils 5%, lymphocytes 95%, no RBCs---protein 300mg/dL (normal upto 40mg/dL), sugar 50 mg/dL.
  - No microorganisms were found in gram stain
- **What is likely diagnosis?** Tuberculous meningitis
- **Mention differential diagnosis?** Viral meningitis, fungal meningitis
- **Discuss treatment?** ATT

✓ Hint: High lymphocytes, High protein and low sugar suggestive of tuberculosis meningitis

- **A 19-year-old man presented with high grade fever for 2 days and disoriented for last 4 hours. On examination there is neck rigidity and Kernig signs is positive. CSF examination reveals**
  - Color: Turbid-----Pressure: Increased----, proteins 190mg/dL, sugar 16mg/dL, polymorphs 96% and lymphocytes 4%,
- **What is likely diagnosis?** Pyogenic meningitis
- **What are the causes?** Streptococcus pneumonia, H. influenza, Neisseria meningitis
- **Mention complications and treatment?** Brain abscess, hydrocephalous

✓ Hint: High polymorphs, High protein and low sugar suggestive of Pyogenic meningitis

Meningitis

- Clinical manifestations include fever, headache, prostration, and nuchal rigidity
- Organisms
  - Viral causes of meningitis
    - Enteroviruses (especially coxsackievirus), HSV-2 (HSV-1 = encephalitis).
    - **In HIV→ Cryptococcus spp.**

Newborn (0–6 Mo)	Children (6 Mo–6 YR)	6–60 YR
❖ Group B streptococci ❖ E. coli ❖ Listeria	❖ S. pneumoniae ❖ N. meningitidis ❖ H. influenzae type B ❖ Enteroviruses	❖ S pneumoniae ❖ N meningitidis (#1 in teens) ❖ Enteroviruses ❖ HSV

CSF Findings in Meningitis

	Opening Pressure	Cell Type	Protein	Glucose
Normal values	10-20 cm H_2O	WCC 0-5 cells/μL	20-40 mg/dL	45-80 mg/dL (less than 2/3rd of blood glucose)
Bacterial	↑	↑PMN'S	↑ (> 1g/L)	↓ (1/2 of plasma)
Fungal/TB	↑	↑LYMPHOCYTES	↑ (> 1g/L)	↓ (1/2 of plasma)
Viral	↑/Normal	↑LYMPHCYTES	↑/Normal	**Normal or 80%** of plasma glucose remember: Mumps and herpes encephalitis unusually causes a low glucose level

Treatment:

- Empiric therapy
  - Age <3 months or > 50 years-----IV cefotaxime +amoxicillin
  - Age 3months -50 years ---IV cefotaxime
- Meningococcal meningitis --- IV benzylpenicillin or Cefotaxime
- Pneumococcal meningitis or H. influenza --- IV cefotaxime
- Meningitis caused by Listeria – IV amoxicillin + gentamycin
- **If penicillin/cephalosporin allergic ---use Chloramphenicol**
- **Management of contacts:**
  - Prophylaxis should be offered to household and close contacts of patient affected by meningococcal meningitis
    - **Oral ciprofloxacin (DOC—SINGLE Dose) or Rifampicin**
  - **For pneumococcal meningitis no prophylaxis is generally needed**—however there are exceptions to this. If a cluster of pneumococcal meningitis occurs offer antibiotics prophylaxis to close contacts

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Cerebral Malaria/ Viral Encephalitis

- **A 14-year-old girl with type-1 diabetes mellitus is brought with one day history of fever, altered consciousness and a single tonic clonic seizure. She is found to be confused and irritable. Temperature is 102°C, Pulse 96/min, B.P 110/70, no neck stiffness. No abnormality in the chest.**
  - Investigations: blood sugar 60mg/dL, urine sugar and ketone bodies nil. CSF protein 70 mg/dl, sugar 45mg/dl, cells 12/HPF mixture of polys and lympho's.
  - Her condition failed to improve while her blood sugar rose to 125 mg/dL after I.V glucose

- **What three diagnoses would you consider?**
  - Cerebral malaria as she has 1 day history of fever, altered consciousness, no signs of meningeal irritation and hypoglycemia.
  - Viral Encephalitis, suggested by fever, altered consciousness, fits, raised CSF proteins, elevated cell counts on CSF examination.
  - Meningitis, will be a suspected diagnosis due to fever, drowsiness, raised CSF proteins and cell count with mixture of polys and lymphocytes.

- **Suggest two investigation with their significance?**
  - Giemsa stained thick and thin films will be made. This may show characteristic trophozoites of plasmodium falciparum, This confirming cerebral malaria.
  - MRI brain may show cerebral edema especially enhanced signals in temporal lobes, characteristic of viral encephalitis.

- **Outline treatment of the most likely diagnosis?**
  - She will be admitted in high depended unit.
  - I.V line will be taken.
  - Nasogastric tube as well as foley catheter will be passed.
  - Intravenous Artesunate will be started.
  - Monitoring of blood sugar will be done
  - Careful monitoring of fluid balance will be done.
  - Any evidence of super-added bacterial infection will be looked for, if needed antibiotics will be given
  - Severe anemia may need blood transfusion.
  - Monitoring of renal functions and hepatic functions will be done daily, as plasmodium falciparum can cause hepatic and renal failure.
  - She will be switched over to oral antimalarial once stable

Malaria

Organism	Disease	Treatment	
Plasmodium (4 species) ❖ P. Vivax ❖ P. Ovale ❖ P. Falciparum ❖ P. Malariae New specie: P. knowlesi is currently. considered as the fifth species causing malaria **P. malariae is associated with nephrotic syndrome**	**Malaria** ❖ fever, headache, anemia, splenomegaly ❖ P. Vivax/ovale ○ 48-hr cycle (tertian fever- fever on every 3rd day) ❖ P malariae ○ 72-hr cycle (Quartan) ❖ P. falciparum ○ Severe; irregular fever patterns; cerebral malaria, hemoglobinuria, black water fever.	NICE guidelines ○ P. Vivax/ovale or malariae ✓ Chloroquine ○ P. falciparum uncomplicated ✓ artemisin based combinations ○ Sever falciparum malariae ✓ IV artesunate ✓ If parasite count >10%--exchange transfusion ✓ Shock may indicate co-existing bacterial infection—malaria rarely causes hemodynamic collapse Prophylaxis ○ Chloroquine (1 week before and 4 weeks after travel)	**Features of severe malaria** ○ Parasitaemia > 2% ○ Hypoglycemia ○ Severe anemia ○ Cerebral malaria, renal failure, coma ○ ARDS (P. malariae)

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CVA

- **58 years old bank executive, smoker, known hypertension taking enalapril 5mg/day, suddenly vomited and had double vision while sitting in his office, he also noticed that he has difficulty in swallowing, worse with liquids than solids. On examination, pulse 84/min, BP 170/100, heart sounds were normal and chest was clear. On right side he had ptosis and constricted pupil. Finger nose test showed ataxia. Temperature sense in right arm and leg were intact but lost on the left side.**

- **What is the most likely diagnosis?**
  - Considering the following key points:
    - Middle aged male, Smoker, Hypertensive, Vertigo, vomiting, diplopia, dysphagia, Increased BP
    - Right sided Horner syndrome
    - Left sided spinothalamic involvement
    - It is possible that patient had suffered from cerebrovascular accident (CVA) most likely Lateral medullary syndrome.

- **What investigation you will carry out and why?**
  - MRI brain, as the lesion involves brain stem (medulla) which is not visualized on CT scan properly. So, MRI brain will be a preferable modality in this patient to look for evidence of ischemia or hemorrhage.
  - After confirmation of stroke the investigations will be directed to look for the underlying cause. These will include.
    - Carotid Doppler studies followed by MR angiography or conventional angiography.
    - ECG, echocardiogram, chest X-ray.
    - Holter monitoring if ECG suggests arrhythmia.
    - Fasting lipid profile
    - Serum homocysteine levels.
    - Complete blood count to look for polycythemia, anemia, raised TLC for any evidence of infection, thrombophilia.
    - Blood glucose.
    - Serological tests of syphilis of required.
    - ESR if any evidence of vasculitis present.
    - Blood cultures for endocarditis, if still no underlying evidence is found.
    - Then work for hypercoagulable states (protein C, S antithrombin III, factor V Leiden) will be done.

Subarachnoid Hemorrhage

- **45-year-old male presented with severe headache followed by unconsciousness, neck rigidity, and Kernig sign present. CSF reveals**
  - CSF: Red color, increased pressure, plenty of RBCS, polymorphs 60%, lymphocytes 40%

- **What is likely diagnosis?** subarachnoid hemorrhage
- **What are the likely causes?** Berry Aneurysm, AV Malformations

✓ Hint: Severe headache, Hemorrhagic CSF and unconsciousness is suggestive of Subarachnoid hemorrhage

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Optic Atrophy

- **A 62 years old man has presented with progressive deterioration of vision in the left eye for the past 3 months. On fundoscopic examination, left disc revealed pallor and reduced vascularity but right fundus showed papilledema and dilated veins.**

- **What is the clinical diagnosis?**
  - Left optic atrophy with right papilledema.

- **Causes of such clinical diagnosis?**
  - Raised intracranial pressure.
  - Raised blood pressure.
  - Optic neuritis (multiple sclerosis)
  - Central retinal vein thrombosis.
  - Multiple sclerosis causes optic atrophy

- **What three relevant investigation you will carry out?**
  - CT / MRI brain to see for any space occupying lesion, ventricular dilatation or any periventricular plaque so multiple sclerosis and raised intracranial pressure will be easily detected.
  - Complete blood count, high hemoglobin and PCV may suggest polycythemia which can cause thrombus formation and hence nerve infarction this can also lead to central retinal vein thrombosis.
  - Anemia with macrocytosis may suggest B12 deficiency, a recognized cause of optic atrophy.
  - ESR, markedly raised ESR may indicate underlying giant cell arteritis in this elderly gentleman

Multiple Sclerosis

Definition	❖ Autoimmune inflammation and demyelination of CNS (brain and spinal cord).
Epidemiology	❖ Most often affects women in their 20s and 30s
Clinical features	❖ Symptoms may exacerbate with increased body temperature (eg, hot bath, exercise). ❖ Relapsing and remitting is most common clinical course. ❖ Charcot triad of MS is a **SIN**: ○ **S**canning speech ○ **I**ntention tremor (also **I**ncontinence and **I**nternuclear ophthalmoplegia "INO") ○ **N**ystagmus ❖ Other features: ○ Visual: ▪ Optic neuritis (sudden loss of vision resulting in Marcus Gunn pupils) ▪ Optic atrophy ▪ INO ○ Sensory: ▪ Pins/needles and numbness, Sensory symptoms lasting for weeks are common in MS ▪ Trigeminal neuralgia ▪ Lhermitte's syndrome: Neck flexión may precipitate sensation of electric shock running down spine ○ Motor: ▪ Spastic weakness: most commonly seen in the legs, ▪ Intentional tremors ▪ Urinary incontinence
Investigations	❖ Diagnosis requires demonstration of lesions **disseminated** in time and space ❖ **MRI (Gold standard)** ----High signal T2 lesions, **periventricular plaques** ❖ CSF: ----**Oligoclonal bands** (and not in serum) ❖ Visual evoked potentials: VEP
Management	❖ There is no cure. ❖ Treatment is focused at reducing the frequency and duration of relapses. ❖ Acute relapse: High dose IV steroids (methylprednisolone for 3-5 days) ❖ Disease modifying therapies (β-interferon, glatiramer, natalizumab) ❖ Mitoxantrone: reserved for **high frequency relapse** rates unresponsive to beta interferon ❖ Spasticity: Baclofen and gabapentin ❖ Pain: (TCAs, anticonvulsants) ❖ Plasma exchange: severe function or life-threatening relapses not responding to conventional treatment.

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Guillain Barre Syndrome

- **A 19 years old student is seen in examination department with 3 days history of weakness of both legs. About 2 weeks ago, he had influenza like illness. For the last 2 days, he had developed dropping of both eyelids. He also feels tingling in fingers. Physical examination reveals left sided ptosis, slight B/L facial weakness. Rest of the cranial nerves are normal. In the limbs there is moderate weakness, more pronounced distally. Sensations are normal. Left biceps reflex is present. Rest of the muscle stretch reflexes are not elicitable.**

- **What is the most likely diagnosis?**
  - It is Guillain-Barre syndrome, an acute demyelinating polyradiculoneuropathy. The preceding history of influenza like illness followed by progressive weakness of the body, also involving the face and characterized by areflexia suggests the diagnosis.

- **Write two relevant investigations?**
  - CSF examination, will reveal high protein content with normal cell count.
  - Nerve conduction studies; will reveal demyelinating polyneuropathy.

- **Write three treatment modalities?**
  - Intravenous immunoglobulin (400mg/kg for 5 days) have good results.
  - Plasmapheresis, within few days of onset, in rapidly progressive cases.
  - General measures: He will be admitted in intensive care unit. Continuous monitoring of respiration rate, forced vital capacity (FVC) and oxygen saturation will be done.
  - Mechanical ventilation will be considered if FVC falls below 15 ml/kg or oxygen saturation declines.
  - Chest physical therapy will be done.
  - Low dose heparin will be given to prevent pulmonary embolism. Physiotherapy will be advised

- **What is the prognosis?**
  - Most patients make good recovery, but this may take many months and 10-20% of patient are left with persisting disability.

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Myasthenia Gravis

- **A 50 years old man who is diabetic and hypertensive for last 10 years complain of drooping of eyelids and diplopia for last six months. He is on propranolol, hydrochlorothiazide and glibenclamide. His condition worsened during a recent bout of chest infection. on examination he had normal pupil with normal tendon reflexes and showed no other focal neurological deficit.**

- **What is the likely diagnosis?**
  - The patient is most likely suffering from myasthenia gravis. The features suggesting it:
    - B/L ptosis and diplopia in the presence of normal pupil.
    - Normal tendon reflexes.
    - No neurological deficit.
    - Worsening of symptoms during bout of chest infection.

- **What further clinical observations could substantiate the diagnosis?**
  - The most likely clinical observation is worsening of weakness on sustained activity.
  - This weakness improves after rest.
  - Speech will be assessed. Appearance of dysarthria on continuous speech also favors myasthenia.
  - Weakness of bulbar muscles will be looked for.
  - Absence of sensory loss also favors myasthenia gravis.

- **How will you confirm the diagnosis?**
  - The diagnosis is confirmed by edrophonium test, edrophonium will be given I/V in a dose of 10mg (2mg given initially as test does 8mg 30 seconds later, if test done is well tolerated).
  - There will be an obvious improvement in weakness which lasts for 5 minutes.
  - Electromyography response (EMG) of the affected muscles is also characteristic. On continued stimulation of the muscle, there will be a detrimental response.
  - Levels of acetylcholine receptor antibodies will be checked. They are elevated in 90% of cases.
  - To exclude co-existing thymoma, AP lateral views of chest Xray and CT Chest will be done.

- **Give an outline of management.**
  - He will be started on anti-cholinesterase. Neostigmine (15mg/day) or pyridostigmine (60mg/day). This wil improve him symptomatically.
  - Thymectomy will be done for sustained symptomatic relief.
  - In-case the patient does not improve or develop more neurological weakness, then steroids with or without immunosuppressive agents will be given.

Myasthenia Gravis Vs. Lambert-Eaton Syndrome

	Myasthenia Gravis	Lambert-Eaton Syndrome
Frequency	Most common NMJ disorder	Uncommon
Pathophysiology	Autoantibodies to postsynaptic ACh receptor	Autoantibodies to presynaptic Ca^{2+} channel → ↓ACh release
Clinical	Ptosis, diplopia, weakness Worsens with muscle use and recovery on rest. Improvement after edrophonium (Tensilon) test	Proximal muscle weakness, autonomic symptoms (dry mouth, impotence) Improves with muscle use
Associated With	Thymoma, Thymic hyperplasia	Small cell lung cancer
AChE Inhibitor Administration	Reverses symptoms (edrophonium to diagnose, pyridostigmine to treat)	Minimal effect

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Systemic Lupus Erythematosus (SLE)/ APLS

- **A 20 years old female patient has butterfly rash on her face, painful joints, fever and positive ANA and anti dsDNA. She has history of recent abortion**
- What is your likely diagnosis? APLS

Systemic Lupus Erythematosus (SLE)

- Most common connective tissue disorder, **more common in women's**
- It is multisystem inflammatory autoimmune disorder
- Classic scenario is like rash, joint pain, and fever, commonly in a female of reproductive age
- Two most important lesions frequently asked in exam:
  - Libman-Sacks Endocarditis— (Mnemonic: (LSE in SLE)
    - Nonbacterial, thrombi usually on mitral or aortic valve
  - Lupus nephritis:
    - Glomerular deposition, can be nephritic or nephrotic

- **SLE and Pregnancy:**
  - Unlike many autoimmune diseases systemic lupus erythematous (SLE) often becomes worse during pregnancy and the puerperium
  - Neonatal complications include congenital heart block, it is strongly associated with **anti-Ro** (SSA) antibodies

- **Findings:**

Antinuclear antibodies (ANA)	**Sensitive**, not specific
Anti-dsDNA antibodies	**Highly specific**, poor prognosis (renal disease)
(Anti-Smith antibodies	**Most specific**, not prognostic
Antihistone antibodies	Sensitive for drug-induced lupus (eg, hydralazine, procainamide)
↓C3, C4	Formation of complexes leads to consumption of complement

- **Diagnostic criteria (manifestation)**

Presence Of ≥ 4 Of Following 11 Criteria (mnemonic: DOPAMINe RASH)
Discoid rash
Oral ulcers
Photosensitivity
Arthritis (non-erosive)
Malar rash (**butterfly rash on cheeks and nose with sparing of nasolabial folds**)
Immunological → positive anti-dsDNA (very specific, prognostic), anti-Sm (very specific, non prognostic), antiphospholipid antibodies
Neurological: seizures or psychosis
Renal: proteinuria, glomerulonephritis
ANA positive (Best screening test)
Serositis: Pericarditis, Pleuritis
Haematological: hemolytic anemia, lymphopenia, leukopenia, thrombocytopenia

- **Treatment:** NSAIDs, steroids, immunosuppressants, hydroxychloroquine.

Antiphospholipid antibody syndrome	❖ This prothrombotic disorder is characterized by autoantibodies directed against a number of protein antigens complexed to phospholipids. ❖ 1° or 2° autoimmune disorder (**most commonly in SLE**). ❖ Diagnose based on clinical criteria including history of thrombosis (arterial or venous) or **spontaneous abortion** along with laboratory findings ❖ Lab findings: lupus anticoagulant (↑aPTT), anticardiolipin antibody, anti-β2 glycoprotein antibodies. ❖ Treat with systemic anticoagulation. Remember: Anticardiolipin antibody, can cause a false-positive serologic test for syphilis.

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Lupus Cerebritis/ Encephalopathy/CVA

- **A 30-year-old lady, who is an established case of SLE presented in a state of confusion in emergency department. History reveals that she was on prednisolone 60mg/day. Examination does not reveal any additional neurological signs investigations. Hb 10gm%, platelet count 150000/cm, ESR 65 1st hour and urinary protein 500mg/24hour.**

- **Give five differential diagnoses.**
  - Lupus Cerebritis, an important neurological manifestation of SLE.
  - Steroid induced psychosis.
  - Uraemic encephalopathy, as she has proteinuria, indicating renal involvement SLE can cause nephrotic, Nephritic syndrome, leading to renal failure.
  - Cerebrovascular accident (CVA), as it causes vasculitis. Vasculitis can lead to ischemia/infarction in the brain.
  - Electrolyte imbalance e.g. hyponatremia can lead to confusional state

- **Name five investigations with justifications.**
  - Cerebrospinal fluid (CSF) analysis, this will be carried out to look for any inflammatory disorder of brain e.g. cerebritis or meningitis. This could be either due to SLE. Itself or secondary to some infection as she is immunosuppressed due to her disease as well as steroid. CSF may show elevated proteins and WBC count.
  - *CT brain*, to look for any infarct, brain edema, or increased meningeal enhancement.
  - Renal functions; serum urea and creatinine so as to rule out Uraemic encephalopathy.
  - Serum electrolytes; sodium and potassium to look for electrolyte imbalance.
  - WBC count; to rule to septicemia

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Hepatitis B

Serotypes	❖ There are eight different genotypes (A–H).
Transmission	❖ Parenteral ❖ Sexual (present in saliva, semen, and vaginal secretions) ❖ Vertical (mother to neonate—risk of chronic infection in infants is 90%)
Person at risks	❖ Multiple sex partners (co-infection with HIV). ❖ Other groups at risk include patients and staff at hemodialysis centers, physicians, dentists, nurses, and personnel working in clinical and pathology laboratories and blood banks
Laboratory findings	❖ Elevated serum aminotransferase levels ❖ **HBsAg**—Active infection. • Persistence of HBsAg more than 6 months after the acute illness signifies chronic hep-B. ❖ **Anti-HBs**— • Specific antibody to HBsAg (anti-HBs) appears in most individuals after clearance of HBsAg and after successful vaccination against hepatitis B. ❖ **Anti-HBc**— • IgM anti-HBc appears shortly after HBsAg is detected. (HBcAg alone does not appear in serum.) • In the setting of acute hepatitis, IgM anti-HBc indicates a diagnosis of acute hepatitis B, and it fills the serologic gap in rare patients who have cleared HBsAg but do not yet have detectable anti-HBs. • IgM anti-HBc can persist for 3–6 months, and sometimes longer. • IgM anti-HBc may also reappear during flares of previously inactive chronic hepatitis B. • IgG anti-HBc also appears during acute hepatitis B but persists indefinitely, whether the patient recovers (with the appearance of anti-HBs in serum) or chronic hepatitis B develops (with persistence of HBsAg). • In asymptomatic blood donors, an isolated anti-HBc with no other positive HBV serologic results may represent a falsely positive result or latent infection in which HBV DNA is detectable in serum only by polymerase chain reaction (PCR) testing. ❖ **HBeAg**— • HBeAg is a secretory form of HBcAg that appears in serum during the incubation period shortly after the detection of HBsAg. • HBeAg indicates viral replication and infectivity. • Persistence of HBeAg beyond 3 months indicates an increased likelihood of chronic hepatitis B. • Its disappearance is often followed by the appearance of anti-HBe, generally signifying diminished viral replication and decreased infectivity. ❖ **HBV DNA**— • The presence of HBV DNA in serum generally parallels the presence of HBeAg, although HBV • DNA is a more sensitive and precise marker of viral replication and infectivity. • In some patients with chronic hepatitis B, HBV DNA is present at high levels without HBeAg in serum because of development of a mutation in the core promoter or precore region of the gene that codes HBcAg; these mutations prevent synthesis of HBeAg in infected hepatocytes.
Prevention	❖ Strict isolation of patients is not necessary. ❖ Careful handling of contaminated needles, screening of blood, test of pregnant ladies, practicing safe sex ❖ **Pregnant females** • Although cesarean section, in combination with immunoprophylaxis of the neonate, reduces the risk of perinatal transmission of HBV infection when the mother's serum HBV DNA level is 200,000 international units/mL or higher • it is preferable to initiate antiviral treatment of the mother in the third trimester ❖ **Infants born to HBsAg positive mothers** • 0.5 mL of hepatitis B immunoglobins (HBIG) within 12 hours after birth and hepatitis B vaccine at different site • Second dose at 1-2 months , and third dose at 6 month • At 12 months of age, immunized infants level of hepatitis b surface antibodies (Anti-HBs) checked

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	• If Anti-HBs positive---- vaccination effective • If Anti-HBs negative---- vaccination ineffective—then check HBsAg • If both HBsAg and Anti-HBs negative----repeat the schedule at 0, 1 and 6 months ❖ **Infants born to mother of unknown HBsAg status** • Same schedule as above except that HBIG is withheld until HBsAg status is known • If she turned out to HBsAg positive, HBIG should be initiated but within 7 days after birth. ❖ **Post Exposure Prophylaxis for Adults** • Hepatitis B immune globulin (HBIG) may be protective given within 7 days after exposure (adult dose is 0.06 mL/kg body weight) followed by initiation of the HBV vaccine series. • This approach is recommended for unvaccinated persons exposed to HBsAg

Anti-HBs level (mIU/ml) Response

> 100	Indicates adequate response	No further testing required. Should still receive booster at 5 years
10–100	Suboptimal response	One additional vaccine dose should be given If immunocompetent no further testing is required
< 10	Non-responder	Test for current or past infection. ○ Give further vaccine course (i.e. 3 doses again) with testing following. ○ If still fails to respond then HBIG would be required for protection if exposed to the virus

Management

Management – Acute Hepatitis B

❖ In hepatitis B, among previously healthy adults who present with clinically apparent acute hepatitis, **recovery occurs in ~99%**; therefore, **antiviral therapy is not required.**

❖ In rare instances of severe acute hepatitis B, institution of antiviral therapy with a **nucleoside analogue (entecavir or tenofovir,** the most potent and least resistance-prone agents) should continue **until 3 months after HBsAg seroconversion** or 6 **months after HBeAg seroconversion.**

Management of Chronic Hepatitis-B

❖ The currently approved treatment options include immunomodulatory therapies (including Pegylated Interferon-α) and Nucleoside/Nucleotide Analogs (NA's).

❖ The nucleoside analogs include (lamivudine, entecavir, telbivudine and emtricitabine) and nucleotide analogs include (adefovir and tenofovir).

HBeAg	HBV DNA	ALT level	Treatment strategy
Positive	≥20000 IU/mL	>2 ULN	• Treat with any of recommended agents i.e. nucleoside or nucleotide analog or with pegylated interferon • Entecavir and Tenofovir are favoured over earlier generation drugs
Negative	≥2000 IU/mL	1-2 x ULN	○ Start the treatment
Negative	≥2000 IU/mL	normal	○ Start the treatment if age is more than 35-40 ○ Start Rx if biopsy demonstrates fibrosis of 2-4

Treatment regimens

❖ Nucleoside and nucleotide analogs generally have been discontinued 6–12 months after HBeAg-to-anti-HBe seroconversion

❖ The preferred first-line oral agents are **entecavir and tenofovir.**

❖ **Entecavir**

✓ Dose is 0.5 mg not resistant to lamivudine and 1 mg if resistant to lamivudine

❖ **Tenofovir**

✓ 300 mg orally daily

❖ **Pegylated Interferon**

✓ PEG interferon α2a is the only Interferon approved for the treatment of Chronic Hepatitis B

✓ DOSE - 180μg SC weekly * 48 weeks.

❖ **Lamivudine**

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- ✓ The first of the nucleoside analogues to be approved, the lamivudine inhibits reverse transcriptase activity of both HIV and HBV and is a potent and effective agent for patients with chronic hepatitis B.
- ✓ DOSE – 100mg P/O Once daily.
- ✓ DURATION – Until HBeAg Conversion. Patients should receive a period of consolidation therapy of ≥6 months in Western patients and ≥1 year in Asian patients after HBeAg seroconversion.

Pregnant females:

- ❖ Telbivudine and tenofovir are classified as pregnancy category B drugs, and lamivudine, a category C drug, has been shown to be safe in pregnant women with HIV infection.
- ❖ Antiviral therapy has been recommended, beginning in the third trimester, when the mother's serum HBV DNA level is 200,000 international units/mL or higher to reduce levels at the time of delivery.
- ❖ Peginterferon may be considered in order to avoid long-term therapy with an oral agent, as in young women who may want to become pregnant in the future

Treatment failure:

- ❖ Failure of an antiviral drug to reduce HBV DNA levels by ≥1 x log10IU/mL within 3 months.
- ❖ Rebound of HBV DNA levels of ≥1 x log 10IU/mL from the nadir in persons with an initial antiviral treatment effect
- ❖ In persons with confirmed or suspected antiviral resistance to lamivudine, entecavir, adefovir or telbivudine, a switch to tenofovir is recommended

HBV-HIV coinfection

- ❖ Generally, for HBV-HIV co-infected patients who do not yet meet treatment criteria for HIV infection, treating for both HBV and HIV is recommended.
- ❖ Lamivudine, Emtricitabine and Tenofovir are all nucleoside analogs with activity against both HIV and HBV.
- ❖ Rate of HBV resistance to Lamivudine in HBV-HIV coinfection is almost 90% at 4 years, hence lamivudine should never be used as monotherapy.
- ❖ **Tenofovir and the combination of tenofovir and emtricitabine in one pill are approved therapies for HIV and represent excellent choices for treating HBV infection in HBV-HIV co-infected patients.**

HBV-HCV Co-Infection

- ❖ When both viruses need to be treated, PEG IFN α (with ribavarin for hepatitis C) can be used to address both infections.
- ❖ Alternatively, both diseases can be treated independently with PEG IFN-α plus ribavarin for hepatitis C and one of the oral agents for hepatitis B.

When to Stop Treatment?

- ✓ Lifelong NA therapy: All persons with clinical evidence of Cirrhosis.
- ✓ Discontinuation and careful long term follow up in:
  - Persons without clinical evidence of cirrhosis
  - Evidence of HBeAg loss and seroconversion to anti-HBe after completion of at least 1 year of treatment.
  - In association with persistently normal ALT levels and persistently undetectable HBV DNA levels

Serological Patterns of Hep-B

STAGE	HBsAg	HBeAG	Anti-HBc	Anti-HBs
Acute Infection	positive	positive	positive (IgM)	Negative
Chronic Infection	positive	positive	positive (IgG)	negative
Immune from Previous Infection	negative	negative	positive	positive
Immune from Vaccination	negative	negative	negative	positive
Window Period	negative	negative	positive (IgM)	negative

Immunization:

- ❖ 3 doses, at 0, 1 and 6 months, and a booster dose after 5 years

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Clinical Scenarios

Hepatitis C

- Treatment of chronic HCV infection has two goals. The first is to achieve sustained eradication of HCV (ie, SVR), which is defined as the persistent absence of HCV RNA in serum 12 weeks after completing antiviral treatment.
- The second goal is to prevent progression to cirrhosis, hepatocellular carcinoma (HCC), and decompensated liver disease requiring liver transplantation

Genotype 1-6	❖ Sofosbuvir 400mg OD- Used in combination with pegylated interferon and ribavirin	Duration 12-24 weeks
Genotype 1-6	❖ Sofosbuvir 400mg OD with daclatasvir	
Genotype 1-6	❖ Sofosbuvir 400mg OD with velpatasvir	
Genotype 2 and 3	❖ Sofosbuvir 400mg OD with ribavirin alone	
Genotype 1- 4	❖ Sofosbuvir 400mg OD with simeprevir	
Genotypes 1, 3, and 4	❖ Sofosbuvir 400mg OD with ledipasvir	

- Treatment with peginterferon-based therapy was associated with frequent, often distressing, side effects, and discontinuation rates were as high as 15–30%.
- Peginterferon alfa is contraindicated in pregnant or breastfeeding women and those with decompensated cirrhosis, profound cytopenias, severe psychiatric disorders, autoimmune diseases, or an inability to self-administer or comply with treatment.
- Men and women **taking ribavirin must practice strict contraception until 6 months after the conclusion of therapy because of its teratogenic effects in animals.**
- Ribavirin should be used with caution in persons over 65 years of age and in others in whom hemolysis could pose a risk of angina or stroke.
- The definition of clearance of HCV RNA requires use of a sensitive real-time reverse transcriptase-PCR assay to

Hepatitis C in pregnancy

- For risk reduction of HCV transmission to future offspring, women of reproductive age with confirmed HCV infection should receive antiviral therapy prior to pregnancy consideration when possible. There is no currently known intervention to reduce maternofetal transmission in pregnant women with HCV infection.
- At the initiation of prenatal care, HCV-antibody-positive pregnant women should undergo HCV RNA and routine hepatic function studies to evaluate the risk of maternofetal transmission and severity of liver disease. These women should also receive prenatal and intrapartum care that is appropriate for their individual obstetric risk(s).
- Postpartum, HCV- or HIV-HCV–infected mothers may breastfeed, unless she has cracked, damaged, or bleeding nipples. In addition, postdelivery HCV-infected women should be reevaluated for spontaneous clearance of their HCV RNA.

Treatment response:

- At week 4-----HCV RNA undetected or detectable only at the limit of the quantification. Higher values at this point in time suggest suboptimum adherence.
- At week 12-----
  - ✓ HCV RNA undetectable or if a greater than 2-log-fold reduction in HCV RNA level is present, therapy should be continued because, according to Fried et al, up to 65% of patients go on to develop a SVR
  - ✓ Conversely, if an early virologic response is not present, treatment should be stopped
- AT 6 months----
  - ✓ The HCV RNA level should be rechecked 6 months after the completion of treatment;
  - ✓ if HCV RNA is detectable, the patient has had a relapse of the disease and an alternative treatment should therefore be considered.
  - ✓ If HCV RNA is undetectable and test results remain negative, the patient has developed an SVR.

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HIV

Cause	❖ HIV destroys CD4+ cells —weakens immune system ❖ Start antiretroviral theray in HIV when CD4 count is less than 350 × 10⁶/L	
AIDS	**Transmission**	❖ Sexually transmitted ❖ Contact with infected blood ❖ From mother to child during pregnancy, childbirth or breast-feeding
	Diagnosis	❖ AIDS diagnosis ≤ 200 CD4+ cells/mm3 (normal: 500–1500 cells/mm3)
	Diagnostic Tests	❖ Presumptive test→ ELISA and ❖ Confirmatory: Western blot assay ❖ For viral load→ PCR **Note:** ELISA/Western blot tests ❖ Falsely ⊖ in the first 1–2 months of HIV infection ❖ falsely ⊕ initially in babies born to infected mothers ❖ Use PCR in neonates to detect viral load.
Common diseases of HIV-positive adults	❖ ***CD4+ cell count < 500/mm3*** ○ Candida albicans→ Oral thrush ○ EBV →Oral hairy leukoplakia ○ HHV-8 →Kaposi sarcoma ○ HPV → Squamous cell carcinoma, cervical cancer ❖ ***CD4+ cell count < 200/mm3*** ○ Pneumocystis jirovecii → Pneumocystis pneumonia "Ground-glass-pulmonary infiltrates" opacities on CXR ❖ **CD4+ cell count < 100/mm3** ○ Aspergillus fumigatus →Hemoptysis, Cavitation/infiltrates on chest imaging ○ Candida albicans → Esophagitis ○ CMV →Retinitis ○ Cryptococcus Neoformans →Meningitis ○ Mycobacterium avium ○ Toxoplasma gondii →Brain abscesses ○ Cryptospridum→ most common causes of Diarrhea	❖ **Pneumocystis jirovecii/carinii** ○ Bilateral intestinal pulmonary infiltrates ○ Diagnosis= Broncho alveolar lavage **(silver stain shows PJ)** ○ Management: • Co-trimoxazole • IV pentamidine in severe cases • Steroids if hypoxic ❖ **Brain lesions in AIDS** ○ Toxoplasmosis→**Most common lesion, Multiple** ring enhancing lesions in **basal ganglia** ○ Progressive multifocal leukoencephalopathy→ caused by JC virus, ***multiple** bilateral* **non enhancing lesions in white matter** ○ Primary CNS lymphoma→ No fever, **single large** homogenous enhancing **periventricular lesion** ❖ **Thallium SPECT test, --- +ive in Lymphomas and –ive in Toxoplasmosis**
HIV seroconversion	❖ Hint: Man returns from trip abroad with maculopapular rash and flu like illness- think of HIV seroconversion always ❖ **For HIV seroconversion---Do HIV PCR and p24 antigen test to confirm diagnosis**	

HIV and pregnancy

- All pregnant women should be offered antiretroviral therapy regardless of whether they were taking it previously
- Even if the CD4 count is more than 350, start it at 20-32 weeks of gestation
- Mode of delivery
  - If viral load < 50 copies/mL= vaginal delivery
  - If viral load > 50 copies/mL= caesarian section
  - Zidovudine infusion = should be started four hours before beginning the caesarean section
- Neonatal antiretroviral therapy
  - If maternal viral load < 50 copies/mL = Zidovudine
  - If maternal viral load > 50 copies/mL = Triple therapy (4- 6 weeks)
- **Do not breast feed (Hep-B +ive mothers can breast feed)**

HIV treatment

- Any regimen below
  - 2 NRTI + 1 NNRTI
  - 2 NRTI + 1 PI (use this regimen in pregnancy)

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Diabetes Mellitus

- Clinical features: Polyuria, polydipsia, weight loss, blurred vision

Diagnosis

Criteria-1	❖ Symptomatic patients plus Abnormal venous glucose on **ONE** occasion i.e. ✓ FBS ≥126mg/dL (≥7mmol/L) OR ✓ RBS≥200mg/dL (≥11 mmol/L)
Criteria 2	❖ Asymptomatic patients plus Abnormal venous glucose on **TWO** occasions i.e. ✓ FBS ≥126mg/dL (≥7mmol/L) OR ✓ RBS≥200mg/dL (≥11 mmol/L)
Criteria 3	❖ HbA1C ≥6.5% **<u>Conditions where HbA1c may not be used for diagnosis:</u>** ○ Haemoglobinopathies ○ Haemolytic anaemia ○ Untreated iron deficiency anaemia ○ Suspected gestational diabetes ○ Children ○ HIV ○ CKD **To convert HbA1c into mmol/L= average plasma glucose = (2 × HbA1c) - 4.5** **To convert mmol/L into mg/dL= multiply it with 18**
Diabetes UK guidelines	❖ Diabetes UK suggests people with **IFG** should then be offered an **OGTT** to rule out a diagnosis of diabetes, also used for gestational diabetes ❖ OGTT ○ Preparation before test: ✓ Unrestricted carbohydrate diet for 3 days ✓ Overnight fasting for at least 8 hours ✓ Sampling: plasma glucose is measured before and 2 hours after 75g oral glucose drink

	Normal	**Impaired Glucose tolerance**	**DM**
Fasting	<7mmol/L (<126mg/dL)	<7mmol/L (<126mg/dL)	≥7mmol/L (≥126mg/dL)
2 hours after glucose	<7.8 mmol/L (<140mg/dL)	7.8--11 mmol/L (140--199mg/dL)	≥11.1 mmol/L (≥200mg/dL)

- **Management of Impaired glucose tolerance test:**
  - Lifestyle modification: weight loss, increased exercise, change in diet
  - At least **yearly** follow-up with blood tests is recommended
  - **NICE recommend metformin for adults at high risk** 'whose blood glucose measure (fasting plasma glucose or HbA1c 6.0-6.4) shows they are still progressing towards type 2 diabetes, despite their participation in an intensive lifestyle-change programme'

Classification

Type	**Type-1 diabetes**	**Type-2 Diabetes**
	❖ Also known as insulin dependent diabetes mellitus (IDDM)	❖ Also known as Non-insulin dependent diabetes mellitus (NIDDM)
Cause	❖ Autoimmune destruction of β cells	❖ ↑ resistance to insulin, progressive pancreatic β-cell failure
Epidemiology	❖ Younger patients usually < 30 years ❖ Usually lean	❖ Older patients usually > 30 years ❖ Usually overweight
Genetics	❖ Family history uncommon ❖ HLA DR3 and HLA DR4 association ❖ 30-50% concordance rate in identical in identical twins	❖ Family history common ❖ No HLA association ❖ >90% accordance rate in identical twins

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Management of Type 2 DM: (NICE guidelines)

Dietary advice:	❖ High fiber, Low fat diet
HbA1c:	❖ Target = 6.5% ❖ Should be checked every 2-6 months until stable, then 6 monthly
Blood pressure:	❖ <140/80 (or < 130/80 mmHg if EOD is present) ❖ ACE inhibitors are first-line
Treatment algorithm	❖ Lifestyle interventions ❖ Usually metformin is first-line, if the HbA1c remains >48 mmol/mol (6.5%) then start o Sulfonylurea o If the patient is at risk from hypoglycaemia (or the consequences of) then a DPP-4 inhibitor (gliptin) or thiazolidinedione should be considered rather than a sulfonylurea ❖ Meglitinides (insulin secretagogues) should be considered for patients with an **erratic lifestyle** (Meglitinides **stimulate insulin release** and are **particularly useful for post-prandial Hyperglycaemia or an erratic eating schedule**, as patients take them shortly before meals. e.g.Nateglinide, Repaglinide {Novonorm}). ❖ if the HbA1c remains >58 mmol/mol **(7.5%)—start insulin** ❖ Metformin treatment should be continued after starting insulin ❖ **Exenatide**: o When BMI > 35 o Continue only if beneficial response occurs and is maintained (> 1.0 percentage point HbA1c reduction and **weight loss > 3% at 6 months**)
Insulin	❖ Side effects: o Hypoglycaemia o Lipodystrophy
Aspirin	❖ The 2010 SIGN guidelines **do not advocate the use of aspirin** for primary prevention in diabetics
Statin	❖ Following the 2014 NICE lipid modification guidelines **only patients with a 10-year cardiovascular risk > 10%** (using QRISK2) **should be offered a statin.** ❖ **The first-line statin of choice is atorvastatin 20mg OD**
Diabetes and Pregnancy	❖ **Risk factors for gestational diabetes:** o BMI of >30 kg/m2 o Previous macrosomic baby(>4.5 kg) or previous gestational diabetes o first-degree relative with diabetes or family origin with a high prevalence of DM (South Asian, black Caribbean and Middle Eastern) ❖ Screening for gestational diabetes: o if a women has had gestational diabetes previously an (OGTT) should be performed: ✓ as soon as possible after booking and ✓ at 24 - 28 weeks if the first test is normal o Women with any of the other risk factors should be offered an OGTT at 24-28 weeks ❖ Diagnostic thresholds for gestational diabetes o These have recently been updated by NICE, gestational diabetes is diagnosed if either: ✓ Fasting glucose is= >5.6 mmol/l ✓ 2-hour glucose is= >7.8 mmol/l ❖ Management of gestational diabetes: o Newly diagnosed women should be seen in a joint diabetes and antenatal clinic within a week o Women should be taught about self-monitoring of blood glucose o Advice about diet (including eating foods with a low glycaemic index) and exercise should be given o If the fasting plasma glucose level is < 7 mmol/l---a trial of diet and exercise should be offered ✓ If glucose targets are not met **within 1-2 weeks** of altering diet/exercise metformin should be started

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	✓ If glucose targets are still not met insulin should be added to diet/exercise/**metformin** ○ If at the time of diagnosis, the fasting glucose level is >= 7 mmol/l ✓ **Insulin should be started** ○ If the plasma glucose level is between 6-6.9 mmol/l and there is evidence of complications such as macrosomia or hydramnios, ✓ **Insulin should be offered** ✓ Glibenclamide should only be offered for women who cannot tolerate metformin or those who fail to meet the glucose targets with metformin but decline insulin treatment ❖ Management of pre-existing diabetes ○ **Weight loss** for women with BMI of > 27 kg/m^2 ○ **Stop oral hypoglycaemic agents, apart from metformin, and commence insulin** ○ **Folic acid 5 mg/day** from pre-conception to 12 weeks gestation ○ **Detailed anomaly scan at 20 weeks** including four-chamber view of the heart and outflow tracts ○ **Tight glycaemic control** reduces complication rates ○ **Treat retinopathy** as can worsen during pregnancy

The Somogyi effect or phenomenon happens when you take insulin before bed and wake up with high blood sugar levels. According to the theory of the Somogyi effect, when insulin lowers your blood sugar too much, it can trigger a release of hormones that send your blood sugar levels into a rebound high

- The Somogyi effect can be treated by eliminating the dose of intermediate insulin at dinnertime and giving it at a lower dosage at bedtime or by supplying more food at bedtime.
- When a waning insulin level is the cause, then either increasing the evening dose or shifting it from dinnertime to bedtime (or both) can be effective.
- A bedtime dose either of insulin glargine or insulin detemir provides more sustained overnight insulin levels than human NPH and may be effective in managing refractory prebreakfast hyperglycemia.
- If this fails, insulin pump therapy may be required

The dawn phenomenon, also called the dawn effect, is the term used to describe an abnormal early-morning increase in blood sugar (glucose) — usually between 2 a.m. and 8 a.m. — in people with diabetes.

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IV Anti-Diabetic (Insulin)

Insulin Type	Rapid Acting	Short Acting	Intermediate Acting	Long Acting
Examples	Lispro Aspart Glulisine	Regular	NPH	Detemir Glargine
Onset	< 15 minutes	30-60 mins	1-2 hours	1-2 hours
Duration of Action	3-6 hours	6-10 hours	10-18 hours	upto 24 hours

Oral Anti-diabetics

Class	Drug names	Mechanism of Action	Side Effects
Biguanides	Metformin	↓gluconeogenesis, ↑glycolysis, ↑glucose uptake (by ↑ insulin sensitivity).	GI upset Contraindicated in Renal insufficiency B12 deficiency anemia
Sulfonylureas	**1st generation:** Chlorpropamide Tolbutamide **2nd generation:** Glimepiride Glipizide Glyburide	Close K+ channel in β cell membrane → cell depolarizes→Insulin release via ↑ Ca2+ influx.	hypoglycemia Weight gain
Meglitinides	Nateglinide, Repaglinide	Stimulate postprandial insulin release by binding to K+ channels on β cell membranes (site differs from sulfonylureas).	
Thiazolidinediones	Pioglitazone Rosiglitazone	↑ insulin sensitivity in peripheral tissue Safe to use in renal impairment.	Weight gain, edema, HF, inc risk of fractures.
Dipeptidyl Peptidase-4 (DPP-4) Inhibitors	Sitagliptin Vildagliptin	Inhibit the degradation of the glucagon-like peptide-1 (GLP-1) and glucose-dependent insulinotropic peptide (GIP).	
α-glucosidase inhibitors	Acarbose	Inhibit intestinal brush-border α-glucosidases. Delayed carbohydrate hydrolysis and glucose absorption→ ↓ after meal hyperglycemia	GI upset
GLP-1 analogs	Exenatide, liraglutide (sc injection)	Inc. glucose-dependent insulin release, Dec glucagon release, Dec gastric emptying, Inc. satiety	Nausea, vomiting, pancreatitis;

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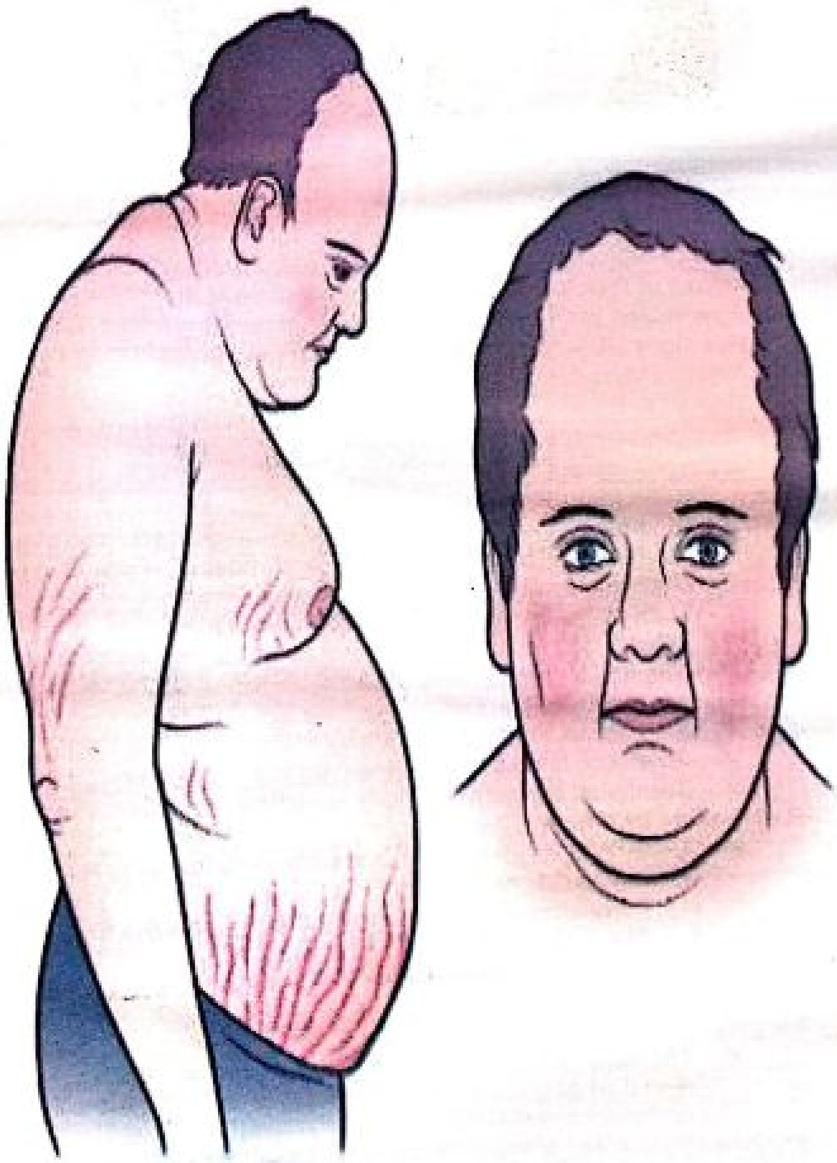
Station Pictograms



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Graves Disease

Identify the picture	❖ Bilateral exophthalmos ❖ Diffuse goitre ❖ Anxious look ❖ My diagnosis is Graves diseases
Features	❖ Typical features of thyrotoxicosis ❖ Specific signs limited to Grave's: ○ Eye signs (30% of patients): exophthalmos, ophthalmoplegia ○ Pretibial Myxedema ○ Thyroid acropachy:
Autoantibodies	❖ Anti-TSH receptor stimulating antibodies (90%) ❖ Anti-thyroid peroxidase antibodies (50%)
Management	❖ **Treatment options include:** ○ **Titration of anti-thyroid drugs (ATDs, for example carbimazole)** ✓ Carbimazole is started at 40mg and reduced gradually to maintain euthyroidism ✓ Typically continued for 12-18 months ✓ Patients following an ATD titration regime have been shown to suffer fewer side effects than those on a block-and-replace regime ✓ The major complication of carbimazole therapy is agranulocytosis ○ **Block-and-replace regimes:** ✓ Carbimazole is started at 40mg ✓ Thyroxine is added when the patient is euthyroid ✓ Treatment typically lasts for 6-9 months ○ **Radioiodine treatment** ✓ Goiter shrinkage may occur in up to 30% following RAI. ✓ Contraindications include ▪ Pregnancy (should be avoided for 4-6 months following treatment) and ▪ Age < 16 years. ▪ Thyroid eye disease is a relative contraindication, as it may worsen the condition ○ **Surgery** ✓ The surgical procedure of choice for patients with Graves' disease is a total resection of one lobe and a subtotal resection of the other lobe, leaving about 4 g of thyroid tissue (Hartley–Dunhill operation). ○ **Propranolol is often given initially to block adrenergic effects**
Thyroid eye disease	❖ **Prevention:** ○ Smoking is the most important modifiable risk factor for development of thyroid eye ❖ **Disease** ○ Topical lubricants may be needed to help prevent corneal inflammation caused by exposure ○ Rapid administration of steroids ○ Where sight is threatened, orbital decompression may be necessary

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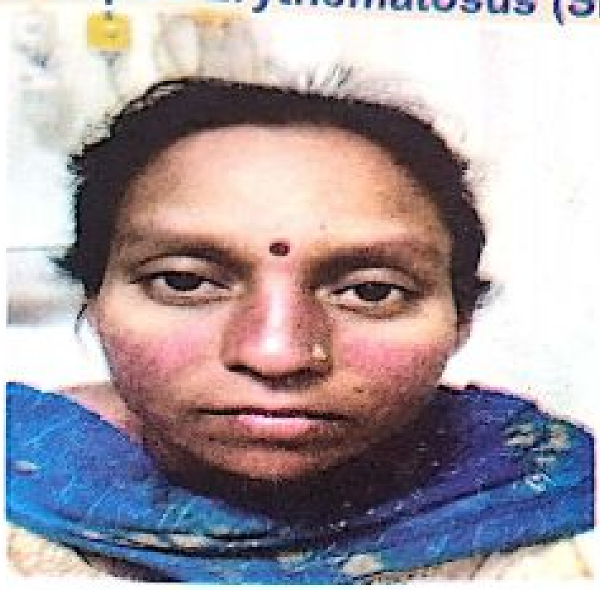
Systemic Lupus Erythematosus (SLE)



Identify the picture	❖ Skin rash---butterfly distribution ❖ My diagnosis is SLE
SLE	❖ Most common connective tissue disorder, **more common in women's** ❖ It is multisystem inflammatory autoimmune disorder ❖ Classic scenario is like rash, joint pain, and fever, commonly in a female of reproductive age ❖ Two most important lesions frequently asked in exam: ○ Libman-Sacks Endocarditis— (Mnemonic: (LSE in SLE) ▪ Nonbacterial, thrombi usually on mitral or aortic valve ○ Lupus nephritis: ▪ Glomerular deposition, can be nephritic or nephrotic
SLE and Pregnancy:	❖ Unlike many autoimmune diseases systemic lupus erythematous (SLE) often becomes worse during pregnancy and the puerperium ❖ Neonatal complications include congenital heart block, it is strongly associated with anti-Ro (SSA) antibodies

Findings:

Antinuclear antibodies (ANA)	**Sensitive**, not specific
Anti-dsDNA antibodies	**Highly specific**, poor prognosis (renal disease)
(Anti-Smith antibodies	**Most specific**, not prognostic
Antihistone antibodies	Sensitive for drug-induced lupus (eg, hydralazine, procainamide)
↓C3, C4	Formation of complexes leads to consumption of complement

❖ **Diagnostic criteria (manifestation)**

Presence Of ≥ 4 Of Following 11 Criteria (mnemonic: DOPAMINe RASH)
Discoid rash
Oral ulcers
Photosensitivity
Arthritis (non-erosive)
Malar rash (**butterfly rash on cheeks and nose with sparing of nasolabial folds**)
Immunological → positive anti-dsDNA (very specific, prognostic), anti-Sm (very specific, non prognostic), antiphospholipid antibodies
Neurological: seizures or psychosis
Renal: proteinuria, glomerulonephritis
ANA positive (Best screening test)
Serositis: Pericarditis, Pleuritis
Haematological: hemolytic anemia, lymphopenia, leukopenia, thrombocytopenia

❖ **Treatment:** NSAIDs, steroids, immunosuppressants, hydroxychloroquine.

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Rheumatoid Arthritis

	Osteoarthritis	Rheumatoid arthritis
Pathogenesis	❖ Noninflammatory joint disease is characterized by degeneration of articular cartilage ❖ Osteoarthritis is most often related to mechanical trauma to the affected joints ("wear and-tear" arthritis)	❖ Chronic inflammatory disorder primarily affects the synovial joints ❖ Autoimmune disorder and Associated with HLA-DR4 (4 walls in a **rheum** (room) ❖ Peak onset = 30-50 years, although occurs in all age groups ❖ F:M ratio = 3:1
Presentation	❖ Asymmetric joint involvement. ❖ **Morning stiffness of <15 minutes** ❖ Improving with rest. ❖ Pain in weight-bearing joints after use ❖ Knee cartilage loss begins medially ("bowlegged").	❖ Symmetric joint involvement ❖ **Morning stiffness of > 1 hour** ❖ Improving with activity ❖ Systemic symptoms (fever, fatigue, weight loss).
Joint Findings	❖ Heberden's nodes→ prominent osteophytes at DIP joints ❖ Bouchards nodes→ prominent osteophytes at PIP joints ❖ **Involves DIP and PIP, but not MCP**	❖ Swan-Neck deformity ❖ Boutonniere deformity ❖ Cervical joint involvement most commonly C1, C2 → **always perform X-ray cervical spine before ETT** ❖ Ulnar deviation of fingers ❖ **Involves MCP, PIP, wrist; not DIP**
Radiographic Hallmarks	*Mnemonic: **LOSS*** ❖ *Loss of joint space-- **typically non-uniform*** ❖ Osteophytes ❖ *Subarticular sclerosis* ❖ *Subchondral cysts*	❖ Loss of joint space-- **typically uniform** ❖ Soft tissue swelling ❖ **Erosions** ❖ Periarticular osteopenia
Lab Findings	❖ RA factor→ negative ❖ ESR, CRP → normal ❖ Anti-CCP→ negative	❖ RA factor→positive (70%) ❖ ESR, CRP → raised ❖ Anti-CCP→ positive (90% –more specific)

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Poor Prognostic Features	❖ Rheumatoid factor positive, Anti-CCP antibodies, HLA DR4, Poor functional status at presentation ❖ X-ray: early erosions (e.g. after < 2 years) ❖ Extra articular features e.g. nodules ❖ Insidious onset & Female gender is associated with a poor prognosis.
Other Conditions Associated with A Positive RF	❖ Sjogren's syndrome (around 100%), Felty's syndrome (around 100%), Cryoglobulinemia II & III 40-100%, Infective endocarditis (= 50%), SLE (= 20-30%), Systemic sclerosis (= 30%)
Extra-Articular Complications with Rheumatoid Arthritis	❖ **Respiratory:** ○ Pulmonary fibrosis & nodules, pleural effusion, bronchiectasis (especially nonsmokers), bronchiolitis obliterans, complications of drug therapy e.g. methotrexate pneumonitis, infection (possibly atypical) secondary to immunosuppression ❖ **Ocular:** ○ keratoconjunctivitis sicca (most common), episcleritis (erythema), scleritis (erythema and pain), keratitis, corneal ulceration, steroid-induced cataracts, chloroquine retinopathy ❖ **Osteoporosis** ❖ **Amyloidosis (AA)** ❖ **Felty's syndrome** ○ RA + splenomegaly + low white cell count+ leg ulcer in chronic seropositive RA ❖ **Caplan's syndrome** ○ RA + Pneumoconiosis + Lung Nodules
Management of Rheumatoid Arthritis	❖ **Initial therapy: (NICE guidelines 2009)** ○ Patients with newly diagnosed active RA start a combination of DMARDs (including methotrexate and at least one other DMARD), plus short-term glucocorticoids ❖ **DMARDs:** ○ **Methotrexate** is the most widely used DMARD. ▪ Pregnancy: ✓ Women should avoid pregnancy for at least 3 months after treatment has stopped ✓ BNF also advises that men using methotrexate need to use effective contraception for at least 3 months after treatment ▪ Prescribing methotrexate: ✓ Methotrexate is taken weekly, rather than daily ✓ Check CBC, RFTs & LFTs before starting treatment and repeated weekly until therapy stabilized, thereafter patients should be monitored every 2-3 months ✓ Folic acid 5mg once weekly should be co-prescribed, taken more than 24 hours after methotrexate dose ✓ The starting dose of methotrexate is 7.5 mg weekly (source: BNF) ✓ Avoid prescribing trimethoprim or cotrimoxazole concurrently→ Increases risk of marrow aplasia ○ Sulfasalazine ○ Leflunomide ○ Hydroxychloroquine ❖ **TNF-inhibitors: (can cause Drug induced lupus)** ○ The current indication for TNF-inhibitor is an inadequate response to at least 2 DMARDs including methotrexate. ○ It includes ✓ Etanercept: (can cause demyelination & reactivation of TB) ✓ Infliximab (risks include reactivation of TB) ✓ Rituximab: ❖ Other important treatment options include analgesia, physiotherapy and surgery.

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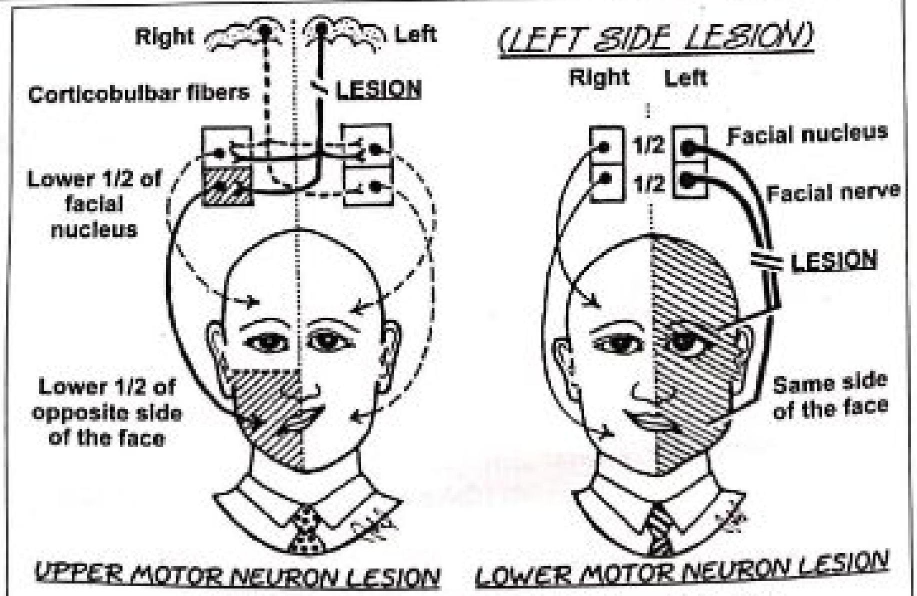
Bell's Palsy

Upper Motor Neuron Lesion	Lower Motor Neuron Lesion
❖ Destruction of motor cortex or connection between motor cortex and facial nucleus in pons	❖ Destruction of facial nucleus or CN VII anywhere along its course
❖ Contralateral paralysis of lower muscles of facial expression	❖ Ipsilateral paralysis of upper and lower muscles of facial expression
❖ Forehead is spared due to its bilateral UMN innervation	❖ Causes: ○ Bell palsy (idiopathic—most common) ○ Lyme disease, herpes simplex, herpes zoster (Ramsay Hunt syndrome), tumors (e.g., parotid gland)
❖	❖ Treatment: ○ Prednisolone 40-60mg daily plus acyclovir for 7 days ○ Artificial tears ○ Physiotherapy



FACIAL NERVE LESIONS (UMNL and LMNL)

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Acromegaly

What is likely diagnosis	❖ Acromegaly
Introduction of disease	❖ There is excess growth hormone secondary to a pituitary adenoma in > 95% of cases
Clinical features	❖ Coarse facial appearance, spade-like hands, increase in shoe size ❖ Large tongue, prognathism, interdental spaces ❖ Excessive sweating and oily skin ❖ Features of pituitary tumour: hypopituitarism, headaches, bitemporal hemianopia
Complications:	❖ HTN, ❖ Cardiomyopathy ❖ DM (>10%) ❖ Colorectal cancer
Investigations:	❖ Growth hormone (GH) levels vary during the day and are therefore not diagnostic ❖ The definitive test is Oral glucose tolerance (OGTT) with serial GH measurements. ❖ Serum IGF-1 may also be used as a screening test and is sometimes used to monitor disease A pituitary MRI may demonstrate a pituitary tumour
Management:	❖ Trans-sphenoidal surgery is first-line treatment for acromegaly ❖ Somatostatin analogue: (Octreotide) ❖ GH receptor antagonist: (Pegvisomant) ❖ Dopamine agonists: (Bromocriptine)

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Pictograms

Cushing Syndrome

Causes	❖ Exogenous:
	  ○ *Exogenous corticosteroid medication (most common)*
	❖ Endogenous causes:
	  ○ *Cushing disease: ACTH-secreting pituitary adenoma. Most common endogenous cause*
	  ○ Adrenal cortical adenoma or adrenal carcinoma
	  ○ Ectopic production of ACTH→ small cell carcinoma of the lung

Features	❖ Non-specific→secondary diabetes, HTN, osteoporosis ❖ More specific→ *central obesity with extremity wasting, moon facies, buffalo hump* ❖ Most specific→spontaneous bruising, *skin striae*, proximal myopathy
Lab values changes	*Some People Get Cold* ❖ *Sodium ↑* ❖ *Potassium ↓* ❖ *Glucose ↑* ❖ *Calcium ↓*

Diagnosis	❖ Step-1: To know whether patient has Cushing syndrome
	  ○ 24 hours urinary free cortisol
	  ○ Dexamethasone suppression test
	    ▪ Normal person→ suppress cortisol levels
	    ▪ Cushing syndrome→ failure to suppress cortisol levels
	❖ Step:2 To know cause of Cushing syndrome
	  ○ Measure Plasma ACTH level:
	    ▪ ↑ ACTH level →source is adrenal glands
	    ▪ ↓ ACTH level→ source is either Pituitary ACTH tumor or Ectopic ACTH production
	❖ Step: 3 To differentiate between Pituitary and ectopic ACTH production
	  ○ 48 hour high dose dexamethasone suppression test:
	    ▪ It involves administration of dexamethasone 6 hourly for 48 hours, measuring 24 hour urinary cortisol 2nd day
	    ▪ If ACTH is suppressed → source is pituitary gland, next step is do MRI brain
	    ▪ If ACTH is not suppressed→ source is ectopic ACTH, next step is do CT chest/abdomen

Pseudo-Cushing	Pseudo-Cushing's: mimics Cushing's ❖ Often due to alcohol excess or severe depression ❖ Causes false positive dexamethasone suppression test or 24 hr urinary free cortisol ❖ Insulin stress test may be used to differentiate

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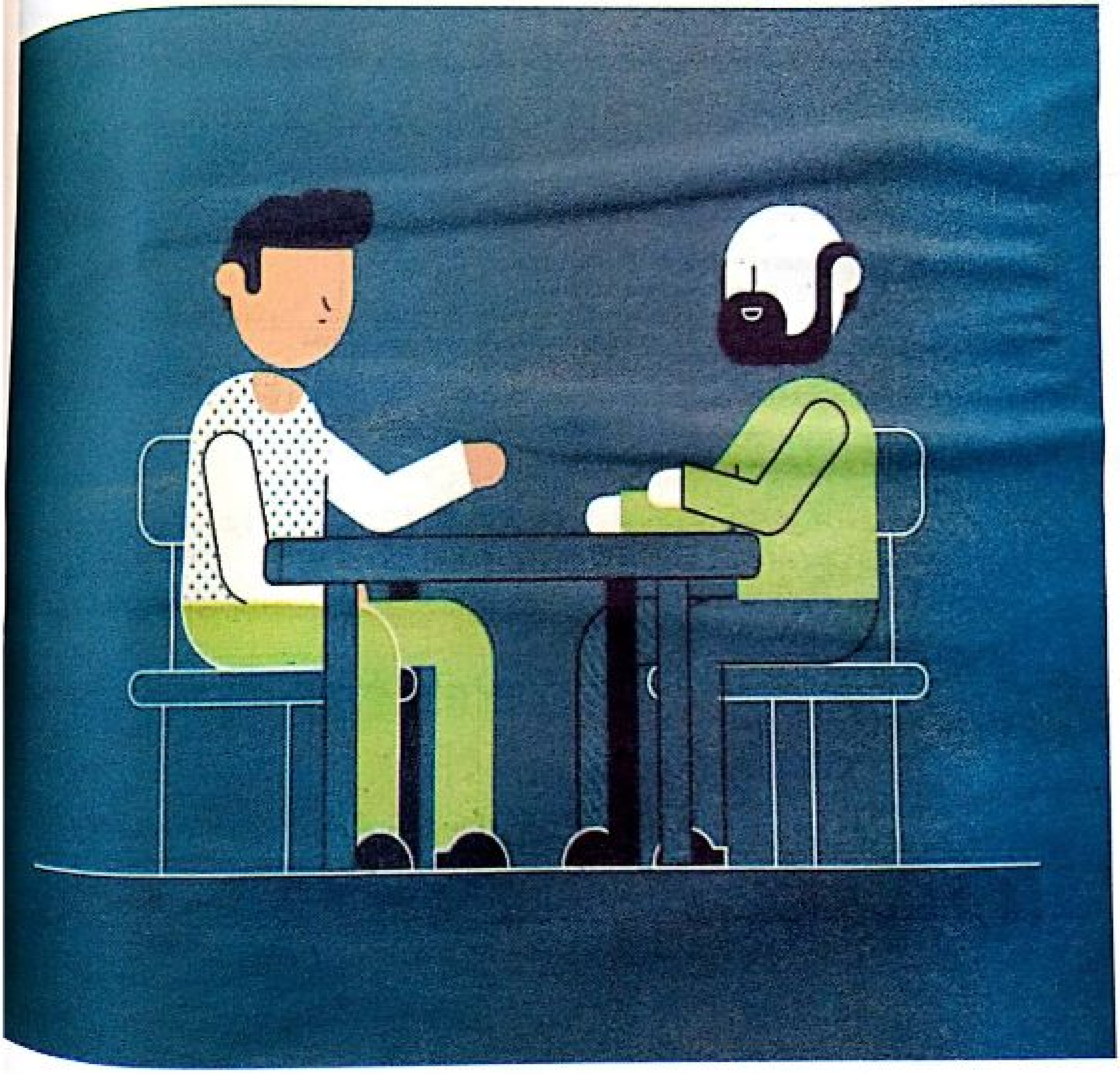
Counselling



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Counseling

Gestational Diabetes Mellitus

تعارف :

میرا نام ڈاکٹر ---------- ہے ۔ میں آپکے علاج معالجے کی ٹیم کا حصہ ہوں ۔

آپکا نام ؟

شوگر کے لئے ٹیسٹ 24 سے 28 ہفتے کے درمیان کیا جائے گا۔

آپ کو پہلے کبھی شوگر کی تشخیص ہوئی یا خاندان میں کسی کو شوگر ہے ؟

کبھی پیشاب کے ٹیسٹ میں شوگر آئی ہے؟

75 گرام گلو کوز پانی میں ملا کر آپ کو پائیں گے ا ور ایک ، دو گھنٹے بعد شوگر کا ٹیسٹ کریں گے۔ اگر اس کی
دار 140 سے زیادہ آئے تو شوگر کے ٹیسٹ کروائیں گے ۔

- OGTT
  - Preparation before test:
    - ✓ Unrestricted carbohydrate diet for 3 days
    - ✓ Overnight fasting for at least 8 hours
    - ✓ Sampling: plasma glucose is measured before and 2 hours after 75g oral glucose drink

	Normal	Impaired Glucose tolerance	DM
Fasting	<7mmol/L (<126mg/dL)	<7mmol/L (<126mg/dL)	≥7mmol/L (≥126mg/dL)
2 hours after glucose	<7.8 mmol/L (<140mg/dL)	7.8--11 mmol/L (140--199mg/dL)	≥11.1 mmol/L (≥200mg/dL

انسولین کے ساتھ شوگر کنٹرول رکھیں ۔ کیونکہ اگر شوگر کنٹرول نہ ہوئی تو بچے کے دل میں سوراخ ہو سکتا ہے ۔
ہ بڑا پیدا ہو سکتا ہے ۔ ڈلیوری کے دوران بچے کا کندھا پھنس سکتا ہے ۔ جس کی وجہ سے نارمل کے بجائے آپریشن
نے کی ضرورت پڑ سکتی ہے ۔

بچے کے پیدائش کے بعد 6 ہفتے تک شوگر کراتے رہے ۔ کیونکہ اگلے 5 سالوں میں آپ کو شوگر ہونے کے 50
چانس ہے ۔

ماں کا بلڈ پریشر بڑھ سکتا ہے ۔ اور مرگی کے جھٹکے بھی لگ سکتے ہیں۔

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Counselling

Mitral Stenosis in Pregnancy

1. محترمہ زچگی کے دوسرے دور میں (24 سے 28 ہفتے) تک زیادہ چانس ہے کہ آپ کی طبیعت بگڑ جائے کیونکہ جسم میں زیادہ پانی جمع ہو جاتا ہے ۔ جوکہ تیسرے دور میں عموماً بہتر ہو جاتا ہے ۔

2. اگر حمل کے دوران آپ کے دل کی رفتار بے قاعدہ ہو جائے تو اس کا علاج کریں گے اور ساتھ یہ کوشش کریں گے کہ دل میں خون جمنے نہ دیں اس کے لئے ہم آپ کو پہلے دور میں Heparin کا ٹیکہ جاری رہے گا ۔ اور دوسرے دور میں Heparin کی جگہ warfarin کی گولی شروع کریں گے اور تیسرے دور میں Warfarin کی گولی بند کر کے Heparin دوبارہ شروع کریں گے جو کہ زچگی سے 12 سے 24 گھنٹے پہلے بند کر دی جائے گی ۔

3. دل کی رفتار نارمل رکھنے کے لئے ہم آپ کو Digoxin/B-blocker کی گولی شروع کریں گے ۔ جوکہ زچگی سے دو ہفتے پہلے روک دی جائے گی تاکہ بچے کی دل کی رفتار کم نہ ہو ۔

4. اگر دوران حمل آپ کو سانس پھولنے لگ گیا یا آپ کے لئے چلنا پھرنا مشکل ہو گیا تو ہم آپ کو (Diuretics) پیشاب اور دوائی شروع کروائیں گے۔ امید ہے اس سے آپ کی طبیعت بہتر ہو جائے گی ۔

5. اگر اس سے بھی آپ کی طبیعت ٹھیک نہ ہوئی تو دوسرے دور میں آپ کو آپریشن کی ضرورت پڑ سکتی ہے ۔

6. اگر طبیعت ٹھیک نہ ہوئی اور خراب ہو گئی کہ بے ہوشی کی حالت آنے لگی یا آپ کا فشار خون کم ہونے لگا تو بجلی کا جھٹکا لینے کی ضرورت پڑسکتی ہے ۔ جس سے آپ کے بچے کو کوئی خطرہ نہیں۔

7. بچے کی پیدائش نارمل ہوگی اور بچے کو دودھ پلا سکتی ہیں۔

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Diabetic Neuropathy Counseling

اگر آپ کے پاؤں سونے لگیں، بھاری محسوس ہوں یا جلن محسوس ہو یا اندھیرے میں آپ اپنا توازن برقرار نہ رکھ سکیں تو آپ فوراً معائنہ کروائیں اگر چلتے ہوئے آپ کی ٹانگوں ، پاؤں میں درد ہونے لگے جو آرام کرنے سے ٹھیک ہو جائے تو فوراً ڈاکٹر سے اپنے پاؤں کی رگوں کا معائنہ کروائیں۔

ذیابطیس (شوگر) کے مریضوں کے لئے پیروں کی حفاظت

1. نیم گرم پانی اور صابن سے پیروں کو روزانہ دھوئیں۔
2. اپنے پیروں خاص طور پر انگلیوں کے درمیان کی جگہ کو مکمل طور پر خشک کریں۔
3. جلد کو نرم رکھنے کے لئے پیروں پر لوشن لگائیں لیکن احتیاط سے کہ انگلیوں کے درمیان جگہ پر لوشن نہ لگے۔
4. اپنے پیروں کا باقاعدہ معائنہ کریں ان پر چھالے، کٹنے کے نشان ، زخم سرخی یا سوجن کی صورت میں فوری طور پر ڈاکٹر سے رجوع کریں۔
5. ناخن گھسنے والی ریتی سے گھس کر ناخن کو چھوٹا کریں۔ ناخن تراش استعمال نہ کریں۔
6. صاف اور نرام موزے استعمال کریں۔
7. اپنے پیروں کو گرم اور خشک رکھیں اگر ممکن ہو تو ذیابیطس کے مریضوں کے لئے بنائے گئے خصوصی موزے پر اپنے ناپ کے لئے جوتے پہنیں۔
8. اندر اور باہر ننگے پیر نہ چلیں۔

<u>ذیابیطس کے مریضوں کے لئے خوراک کا پلان</u>

ناشتہ :

★ دلیہ، گندم کا جو ایک چوتھائی کپ
★ سفید یا براؤن ڈبل روٹی ایک سلائس
★ ابلا ہو انڈا
★ بغیر چکنائی کا دودھ ایک کپ۔

" دوپہر کا کھانا :

★ مرغی (دو چھوٹے ٹکڑے) کسی سبزی کے ساتھ (آدھا کپ) ایک چائے کے چمچ تیل میں
★ لال آٹے کی چپاتی ایک درمیانی یا نان آدھا ۔
★ کم چکنائی کی دہی (آدھا کپ)
★ ابلے ہوئے چاول (آدھا کپ)

"رات کا کھانا :

★ مچھلی (دوچھوٹے ٹکڑے) یا مکس سبز (آدھا کپ ایک چائے کے چمچ تیل میں)
★ لال آٹے کی چپاتی ایک درمیانی ۔
★ کھیرے کا رائتہ (آدھا کپ)

'مڈ مارننگ :

★ کوئی موسمی پھل ایک درمیانہ یا سلاد ایک کپ

شامل کی چائے :

★ شوگر فری بسکٹ (ایک یا دو) یا پاپ کارن (ایک کپ)

غذائیں جس سے ذیابیطس کے مریضوں کو پرہیز پر رکھے۔ بیکری کے بسکٹ ، مکھن ، چینی ، ٹھنڈے مشروبات ، کھجور ، گندم کا دلیہ ، کوو ابلے ہوئے آلو ، تندوری روٹی ، تربوز، حلوہ پوری ، پاپ کارن ، ڈبوں میں بند فروٹ ، پراٹھا فرائش، سفید ڈبل روٹی ، میٹھائی وغیرہ ۔

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Thalassemia Counseling

1. Autosomal dominant 50% chances

2. Autosomal recessive ¼ chances.

3. CBC with P. film, MCV Hb, electrophoresis

1. ہم ماں اور باپ دونوں کچھ ٹیسٹ کروائیں۔
2. اگر دونوں میں نیگیٹو آجاتے ہیں تو پریشانی کی ضرورت نہیں۔
3. اگر ایک میں پازیٹیو آجاتے ہیں تو پریشانی کی ضرورت نہیں۔
4. اگر دونوں میں پازیٹیو آجاتے ہیں تو ۲۵ فیصد چانس ہے بچوں کی منتقلی کا پھر اس کے لئے اور فرید ٹیسٹ کروائیں گے ۔

(CVS) کا ٹیسٹ 12 ہفتے میں amniocentesis اور cord sampling کا ٹیسٹ 18 ہفتے میں) اگر یہ پازیٹیو آجاتے ہیں ۔ تو پھر آپ کی مرضی ہے کہ حمل ضائع کروادیں یا آگے چلائیں۔

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Breaking Bad News Counseling

1. تعارف
2. یہ آپ کے ساتھ کوئی رشتہ دار آئے ہیں ؟
3. کیا آپ انہیں بلانا چاہنے گے؟
4. آپ کیسے ہیں ؟
5. کچھ دنوں پہلے گوشت کا ہمپل لیا تھا ٹیسٹ کرنے کے لئے اس کی رپورٹ آچکی ہے ۔
6. ٹیسٹ کے بعد آپ کی طبیعت کیسی رہی ۔
7. ٹیسٹ کرنے سے پہلے یہ آپ کو بتایا گیا ہوگا کہ کیا ممکنہ وجوہات ہو سکتی ہے ۔
8. آپ کو کیا لگتا ہے کہ آپ کی طبیعت میں خرابی کی وجہ کیا ہو سکتی ہے ؟
9. آپ کی biopsy رپورٹ بتائی ہے کہ یہ کینسر ہے ۔
10. یہ کینسر نسل درنسل منتقل نہیں ہوتا ۔ یہ ضروری نہیں کہ آپ کے خاندان میں کسی کو بھی رہا ہو یا اب ہو جائے ۔
11. علاج کے کئی طریقے ہوتے ہیں۔ جس میں کیمو تھراپی، ایڈیو تھراپی یا آپریشن وغیرہ شامل ہے۔ لیکن کون سا طریقہ آپ کے لئے مفید ہے اس کا اندازہ کچھ مزید ٹیسٹوں کے بعد ہو سکے گا۔
12. آپ کو ہم اسپیشلسٹ کے پاس بھیجیں گے جو آپ کے علاج سے متعلق ساری معلومات فراہم کریں گے ۔
13. آپ کے گھر میں آپ کی دیکھ بھال کے لئے کون کون ہے ۔
14. اگر آپ خود گاری چلا کر آئے ہیں تو کچھ دیر ٹھہر جائے تاکہ آپ کو کچھ وقت سنبھلنے کے لئے مل جائے ۔
15. ہم آپ کو معلوماتی کتابچہ دے رہے ہیں انہیں پڑھئے گا۔ یہ آپ کو مرض سمجھنے میں اور اس کے علاج سے متعلق مفید معلومات فراہم کریں گے ۔
16. آپ نے پسنے کے بارے میں سنا ہے ۔
17. آپ کو پسنے یعنی پھیپھڑوں کا کینسر لاحق ہو گیا ہے ۔
18. مجھے اندازہ ہے کہ چیز آپ کے لئے تکلیف دہ ہے ۔ لیکن آپ کو اگاہ کرنا ہماری زمہ داری ہے ۔
19. اچھی خبر یہ ہے کہ اس کا علاج ہو سکتا ہے ۔
20. جدید دوائیوں اور اپریشن سے کینسر کا علاج کافی حد تک ممکن ہے ۔
21. کیا آپ کینسر سے متعلق معلومات جاننا چاہے گے؟ کہ یہ مرض سگریٹ نوشی سے بھی ہو سکتا ہے ۔
22. پھیپھڑے سے کسی ایک حصے کو متاثر کر سکتا ہے یا دوسرے اعضاء تک بھی پہنچنے کی صلاحیت رکھتا ہے ۔ اگر بروقت علاج نہ کیا جائے ۔
23. کینسر ہو جانے کیا قطعی یہ مطلب نہیں ہے کہ کوئی شخص مرنے کے قریب ہے ۔

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SLE Counseling

1. تعارف
2. آپ کو SLE یا Lupus کا مرض لاحق ہوگیا ہے
3. اس مرض کی وجہ مجموعی طور پر سامنے نہیں آئی اب تک دنیا بھر میں ۔ لیکن یہ کہا جاتا ہے کہ جسم کا وہ نظام جو قوت مدافعت فراہم کر رہا ہوتا ہے وہ جسم کے خلیات توڑ نے لگتا ہے اور مختلف اعضاء میں سوزش کا باعث بنتا ہے جو تکلیف دیتا ہے ۔
4. یہ مرض عورتوں میں زیادہ اہم ہے اور 20 سے 40 سال کی خواتین میں زیادہ ہوتا ہے
5. عام طور پر خاندان کے کسی بھی دوسرے فرد کو لاحق ہو چکا ہوتا ہے ۔
6. Lupus کو ابھارنے میں کئی وجوہات کا تعلق ہے ۔ جیسے دھوپ کا لگنا، کوئی انفکشن کا کسی دوا کا Side effect
7. Lupus کی علامتوں میں زیادہ تھکاوٹ ، وزن گرنا، لمبے عرصے تک بخار کا ہونا جوڑوں اور پٹھوں میں درد ، جسم لال ہونا خاص طور پر چہرے یا ناک اور گال کے حصے میں لال نشان کا پڑجانا ہے ۔ یہ نشان دھوپ میں بڑھ سکتے ہیں۔ منہ میں زخم اور چھالے پڑھ سکتے ہیں اور بال بھی گر سکتے ہیں ہاتھوں اور پیروں میں زخم ہو سکتے ہیں ۔ ہاتھوں اور انگلیوں میں خون کا بہاؤ کم ہونے کی وجہ سے رنگ نیلا بھی پڑسکتا ہے ۔ خون کی کمی بھی ہو سکتی ہے ۔ دل ، گردوں اور پھیپھڑوں پر اثر پڑ سکتا ہے ۔ سر میں درد یا جھٹکے بھی آسکتے ہیں ۔ lupus آہستہ آہستہ بڑھتا ہے ۔ کبھی آپ بالکل ٹھیک محسوس کر سکتی ہے ۔
8. مرض کی تشخیص کے لئے کچھ ٹیسٹوں سے گزر نا ضروری ہے ۔ جن میں اہم خون میں anti-bodies دیکھنا ہے ۔ یہ Anti-bodies دوسرے صحت مند خلیات کو بیمار کرتے ہیں (Anti dsDNA, ANA etc.)
9. تشخیص کے بعد وقتاً فوقتاً ڈاکٹر سے ملنا ضروری ہے ۔
10. خون اور پیشاب کے ٹیسٹ کروانے کی ضرورت پڑسکتی ہے ۔
11. پوری طرح سے lupus کا علاج نہیں ہو سکتا ۔ لیکن اس کو کنٹرول کرنے کے لئے بہت سی ادویات ایجاد ہو چکی ہے ۔
12. یہ دوائیاں حمل کے دوران قطعی منع ہے ۔ MTX, cyclophosphamide, ACEI / ARB, Leflunomideجیسے وغیرہ ۔
13. علاج میں استعمال ہونے والی دوائیوں میںNSAIDS جو درد کے لئے دی جاتی ہیں۔ HCQ جو جلدی قرض یا جوڑوں کے درد کے لئے دی جاتی ہے ۔ ہر دوائی کے اپنے فائدے اور نقصانات ہے ۔
14. علامات اگر شدید ہو جائیں تو steroids بھی دیا جاسکتا ہے ۔ جو اعضاء کی سوجن کو کم کرنے میں مدد دیتا ہے ۔ دوائیوں کے Side effect میں معدے میں درد ، وزن بڑھنا اور بلڈ پریشر بڑھنا ، immunosppressants بھی علاج کا حصہ ہے جو شدید علامتوں میں استعمال ہوتی ہے ۔
15. Lupus کے مریضوں عام لوگوں کی طرح ایک زندگی گزار سکتے ہیں ۔ کیونکہ جدید دوائیوں سے مفید تجربے سامنے آئے ہیں۔
16. حمل کے 1 ہسپتال میں اندراج کروائیں۔ کیونکہ حمل کے تمام مہینوں اور ڈلیوری کی نگرانی میں ہونا ضروری ہے۔
17. آپ کو یا بچے کو خطرات لاحق ہو سکتے ہیں۔
18. حمل سے پہلے خون میں Anti-phospholipid Anti bodies کی تشخیص کرنا ضروری ہے کیونکہ یہ خلیات خون میں لوتھرے بنانے کی صلاحیت رکھتے ہیں اور حمل ضائع کرنے کا باعث بن سکتے ہیں۔
19. خون پتلا کرنے کے لئے انجکشن Heparin لگوانا پڑسکتا ہے ۔
20. ہر تین میں سے ایک حاملہ خاتون کی وقت سے پہلے ڈلیوری ہو سکتی ہے ۔
21. اس کے علاوہ حمل ٹھہرنے سے پہلے اور پیشاب میں پروٹین کا ٹیسٹ بلڈپریشر چیک کیا جاتا ہے ۔
22. اس تمام عرصے میں ہم آپ کی پرائیوسی کا پورا خیال رکھیں گے۔
23. آپ کی گینا کالوجسٹ سے بھی ہم بات کریں گے۔
24. آپ کو یہ طے کرنا ہوگا کہ آپ کے شوہر اور گھر والے اس معاملے سے کس طرح آگا ہوں۔

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Asthma Counseling

1. دمہ ایک دائمی بیماری ہے ۔ جس میں پھیپھڑوں میں موجود ہوا کی آمدورفت کی نالیاں متاثر ہو جاتی ہے۔
2. دمے کا کوئی علاج نہیں تاہم ہم دمے کو دوائیوں کے زریعے کنٹرول کر کے بڑے حد تک نارمل رکھ سکتے ہیں ۔
3. اس مرض میں مریض کے پھیپھڑوں کی ہوا کی نالی یا تو سوجھ جاتی ہے ۔ یا ان میں ورم آجاتا ہے ۔ جس کے باعث ان تین ہو کا گزر ہم ہو جاتا ہے ۔
4. ہوا کی نالیاں تنگ ہونے کی صورت میں فر فراہٹ Wheezing کی آواز آتی ہے
5. سانس لینے میں دشواریہ اور ساتھ ساتھ کھانسی بھی ہو جاتی ہے ۔
6. دمے کے مریضوں میں یہ علامات عموماً رات یا صبح کے وقت ظاہر ہوتی ہے ۔
7. دمے کے علامات گرمیوں کے مقابلے سردیوں میں زیادہ ظاہر ہوتی ہیں۔

دمے کے مریض کی دیکھ بھال :

1. دمہ کا عارضہ ناصرف اس میں مبتلا فرد کے لئے تکلیف دہ ہوتا ہے ۔ بلکہ مریض کے گھر والوں اور تیمار داروں کو بھی تشویش زدہ کر دیتا ہے ۔
2. خاص طور پر دمہ کے شدید دورے کے لمحات میں مریض کی حالت دیکھ کر بعض اوقات اہل خانہ کے ہاتھ پاؤں بھی پھول جاتے ہیں۔
3. دمے کی کیفیت میں دراصل پھیپھڑوں اور تنفیسی اعضاء کے خلاف معمول ردعمل کا نتیجہ ہوتی ہے ۔ جس میں سانس کی نالیاں تنگ ہو کر سانس کی آمدو رفت کو دشوار بنا دیتی ہے ۔ اسے میں مریض کی حالت غیر ہو جاتی ہے ۔ اور شدید بے چینی اور گھٹن محسوس کرتا ہے ۔

تنفس کی دشواری کی صورت میں :

1. پھیپھڑوں کے پھیلے میں کمی آجانے اور بے چینی کی وجہ سے دمے کے مریض کا سانس بے ترتیب ہو جاتا ہے ۔
2. ایسی کیفیت میں مریض کو اس انداز میں بٹھایں یا اٹھائیں جس میں وہ آسانی سے سانس لے سکے ۔
3. مریض کی پوزیشن ایسی ہونی چاہئے جس میں پیٹ کے اعضاء آسان طریقے سے پھیل سکے
4. مریض کو اینہیلر کے استعمال میں مدد کریں۔
5. مریض کے جسم اور ذہن کو پر سکون بنانے کی تکنیکیں استعمال کرنے کی ترغیب دیجئے ۔
6. مریض کی شودی کیفیت اور ہوش اور ہواس کا بھر پور جائزہ لیتے رہیں کہ کہیں غنودگی ماغشی طاری نہیں ہو رہی ہو۔ ایسی صورت میں فوری طبعی امداد کا انتظام کیجئے۔

" سینے کی خشکی اور بلغمی رکاوٹ کی صورت میں "

1. مریض کو کھانسنے میں مد دیجئے ۔ کھانسنے سے سانس کی نالیاں کھل جاتی ہے ۔
2. مریض کو سیدھا بیٹھا دیں یا 45 درجے کے زوایے تک پیچھے ٹیک لگوائے
3. مریض کی پوزیشن تبدیل کرنے سے بلغم بھی اوپر نیچے حرکت کرتا ہے ۔
4. مریض کے کمرے میں گرد و غبور کا ہونا منع ہے ۔
5. مریض کے کمرے کا ماحول مرطوب رکھیں۔
6. بلغم کی صورت میں مریض کو کھانسی روکنے کی کوئی دوائی نہیں دینی چاہئے۔
7. کھانسی میں بلغم کا اخراج ایک قدرتی زریعہ ہے ۔
8. مریض کو دن میں ڈیڑھ سے دو لیٹر پانی پینے کی ترغیب دیں۔ اس سے بلغم کے اخراج میں مدد ہوتی ہے ۔

تھکن اور نقاہت کی صورت میں

1. آکسیجن کی مناسب مقدار نہ ملنے کی وجہ سے دمے کا مریض تھکن اور کمزوری کی شکایت کرتا ہے ۔
2. آکسیجن دینی چاہئے ۔

انفکشن کا خطرہ :

1. دمے کے مریض میں ریسا نر پٹری انفکشن کا امکان ہوتا ہے ۔ اس خطرے سے بچاؤ کے لئے مریض کی قوت مدافعت بڑھانے کے لئے طوقتور غذا استعمال کریں۔
2. وقتاً فوقتاً مریض کا جسمان درجہ حرارت لیتے رہیں۔ بخار کی صورت میں معالج کے پاس لے جائیں۔
3. مریض کو اچھی طرح کھانسنے اور گھرے سانس لینے کی تریقیں دیجیئے۔ اس سے سانس کی نالیاں صاف رہتی ہیں۔ اور انفکشن کا خطرہ کم ہو جاتا ہے ۔

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Diabetic Foot Care

1. نیم گرم پانی اور صابن سے پیروں کو روزانہ دھوئیں۔
2. انگلیوں کے درمیان کی جگہ مکمل خشک کریں۔
3. اپنے پیروں کا باقاعدہ معائنہ کریں۔ چھالے، زخمی ہونے کی صورت میں ڈاکٹر سے رابطہ کریں۔
4. ناخن چھوٹے رکھیے۔
5. نرم اور ملائم جوتوں کا استعمال کریں۔
6. ننگے پیر نہ چلیں۔

Investigation

- Color Doppler
- Peripheral angiography
- FBS &RBS
- HBA1C
- X-ray

Treatment.

- Amputation debridement
- Infection prevention
- Proper dressing
- Care for future.

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CKD And Its Diet

- گردوں کی نا کافی کی مشاورت
- بیماری جب گردے کام کرنے چھوڑ دیتے ہے ۔

Incidence 2 out of 100,000

causes Dehydration, renal stones HTN, DM

Symptoms

چھوٹا پیشاب کم آنا، خون کی کمی ، سانس پھولنا، جسم اور پھیپھڑوں میں پانی کا جمع ہونا شامل نہیں

Complications

ہارٹ اٹیک او رفالج شامل ہے۔

treatment Iron supplements, Ca-supplements, correct electrolytes, correct anemia

Renal transplant, dialysis (2-3/ neck)

(1) sodium "diet"

1. نمک کا استعمال کم کریں۔
2. ڈبے میں بند خوراک میں نمک زیادہ ہوتا ہے انفا استعمال کم کریں۔

(2) phosphorous

1. Dairy products(دودھ ، چیز ، دہی ، آئیسکریم) کا استعمال کم کریں یہ phosphorusکو بڑھاتا ہے ۔

(3) potassium

1. کیلا، ناشپتی ، آلو ، ٹماٹر اگر شوگر کی وجہ سے CKD ہے تو اسکو کنٹرول کریں۔

(4) Protein

1. انڈا بغیر زردی کے کھائیں۔
2. پھل سبزیاں استعمال کریں۔
3. دودھ پی سکتے ہیں۔

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CLD Diet

1. چائے، پانی ، جوس کم مقدار میں لیکن کوئی soft drinks نہیں۔
2. دودھ بغیر ملائی کے چیز (cheese) کا استعمال نہیں کرنا ۔
3. بسکٹ 2-3 لیکن نمک والے نہ ہو۔ نمک اور بیکری والی اشیاء سے پرہیز کریں۔
4. فروٹس (fruits) اور سبزیاں (vegetables) آپ لے سکتی ہے ۔ لیکن canned food کا استعمال نہ کریں۔
5. Vegetable oil استعمال کر سکتی ہے ۔ گھی کے استعمال سے پرہیز کریں۔
6. Packed chips وغیرہ کا استعمال منع ہے ۔

Obesity

1. کیا آپ بتا سکتی ہے کہ آپ کا وزن کب سے زیادہ ہے ؟
2. کیا آپ کی فیملی میں کسی کو obesityہے ؟
3. نوکری کیا کرتے ہیں؟
4. باہر کی اشیاء ، برگر ، پیزا، کولڈرنگ ، میٹھی چیزیں، بیکری کی چیزیں ، چکنائی والی چیزوں کا زیادہ استعمال نہ کریں۔
5. چہل قدمی اور ورزش کریں۔
6. lab test thyroid test , hormone levels , MRI test
7. اگر آپ یہ سب کرتے ہیں تو ہم آپ کے ٹیسٹ کروائے گے اور یہ ٹیسٹ ٹھیک ہوئے تو ہم آپ کیلئے خاص پروگرام بنائیں گے۔ جس کے مختلف حصے ہونگے ۔ آہستہ آہستہ آپ کو موٹا پے سے نجال مل جائے گا۔
8. سب سے پہلے روز مرہ خوراک، ناشتے میں brown breadکا استعمال شروع کرنا ہوگا اور پھیکی چائے پینی ہوگی ۔
9. ورزش اور چہل قدمی و بڑھا نا ہوگا۔
10. پانی کا استعمال زیادہ کریں
11. فروٹ اور سبزیوں کا استعمال صحیح کریں۔
12. بڑا گوشت ، چکنائی والی چیزوں سے پر ہیز کریں۔ چکن اُبال کر کھاسکتی ہے ۔
13. مختلف ادویات بھی ہے ۔ جس میں liraglutide Orslim شامل ہے۔ لیکن اسکے مضر اثرات ہے۔
14. اپریشن بھی کیا جاسکتا ہے ۔
15. آپ ثابت قدم رہے ۔ انشاء اللہ وزن آہستہ آہستہ کم کر سکتے ہیں۔

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Hepatitis- B

1. تعارف
2. سب سے پہلے بتائیں کہ آپ کو اپنی بیماری کے بارے میں کتنی جانکاری ہے ۔
3. کیا آپ اپنے رشتہ داروں کو ساتھ لانا پسند کرے گے ۔
4. بیماری :

یہ جگر کی بیماری ہے ۔ یہ ایک اسا وائرس ہے جو ہمارے جگر کو متاثر کرتا ہے ۔ عام طور پر جگر ہمارے خون کو صاف کرنے ، غذا اور گندگی کو صاف کرتا ہے ۔

5. (incidence) یہ ایک بہت عام بیماری ہے جوکہ ہر ایک لاکھ بندوں میں (2) کو ہوتی ہے ۔
6. Transmission:

یہ بیماری ایک سے دوسرے میں ہم بستری سے ماں سے بچے کو خونْ نوکیلی چیزوں سے لگتی ہے۔

7. Persons at risks:

مختلف لوگوں کے ساتھ ہم بستری، گردوں کے مریض، خون لگانے والے سلنڈر ہسپتال اور اسکا عملہ۔

Lab findings:

- HBsAg, Anti-HBs—, Anti-HBc—, HBeAg— HBV DNA—

8. **Precautions:**

مریض کو الگ کرنے کی ضرورت نہیں ۔

condomکا استعمال کریں۔

استعمال شدہ blade/ razor نہ استعمال کریں۔

0·1·6 month vaccination

اگر آپ کو vaccination لگ چکے ہیں ۔ پھر بھی خطرہ ہے کہ یہ بیماری لگ سکتی ہے ۔ تو اسی حالت میں anti-bodies کا ٹیسٹ کروانا ہوگا۔

Anti-HBs level (mIU/ml) Response

≥ 100	Indicates adequate response	No further testing required. Should still receive booster at 5 years
10-100	Suboptimal response	One additional vaccine dose should be given If immunocompetent no further testing is required
≤ 10	Non-responder	Test for current or past infection. ○ Give further vaccine course (i.e. 3 doses again) with testing following. ○ If still fails to respond then HBIG would be required for protection if exposed to the virus

9. Treatment

HBeAg	HBV DNA	ALT level	Treatment strategy
Positive	≥20000 IU/mL	>2 ULN	• Entecavir and Tenofovir
Negative	≥2000 IU/mL	1-2 x ULN	○ Entecavir and Tenofovir
Negative	≥2000 IU/mL	normal	○ Start the treatment if age is more than 35-40 ○ Start Rx if biopsy demonstrates fibrosis of 2-4

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بچے کو دودھ پلا سکتی ہے - (3) مہینے بعد ALT ٹیسٹ ہوگا -

10. Hepatitis B in pregnancy complications

بچے کا وقت سے پہلے پیدا ہونا (pre-mature birth) وزن کم ہونا (LBW) ، خون آنا شامل ہے -

Mode of pregnancy

HBV-DNA >20000-C-section

علاج' دوائیاں تیسرے ادوار میں شروع کرنا ہوگی

★ علاج بچہ پیدا ہونے کے بعد شروع ہوگا۔

بچے کا علاج:

★ HBIGاور Hep-B-vaccine 12 گھنٹوں کے اندر دونوں مختلف جگوں پر -

★ پھر Hep-B vaccine (1-2) اور (6) مہینے پر لگانے پر میں

★ پھر 12 مہینے پر دوبارہ چیک کرے گے -

★ Tenofovir & lamivudine دونوں pregnancyمیں safe

❖ **Infants born to HBsAg positive mothers**

- 0.5 mL of hepatitis B immunoglobins (HBIG) within 12 hours after birth and hepatitis B vaccine at different site
- Second dose at 1-2 months, and third dose at 6 months
- At 12 months of age, immunized infants level of hepatitis b surface antibodies (Anti-HBs) checked
- If Anti-HBs positive---- vaccination effective
- If Anti-HBs negative---- vaccination ineffective—then check HBsAg
- If both HBsAg and Anti-HBs negative----repeat the schedule at 0, 1 and 6 months

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"Hepatitis –C"

1. تعارف
2. سب سے پہلے بتائیں کہ آپ کو اپنی بیماری کے بارے میں کتنی جانکاری ہے ۔
3. کیا آپ اپنے رشتہ داروں کو ساتھ لانا پسند کرے گے ۔
4. بیماری :
یہ جگر کی بیماری ہے ۔ یہ ایک اسا وائرس ہے جو ہمارے جگر کو متاثر کرتا ہے ۔ عام طور پر جگر ہمارے خون کو صاف کرنے ، غذا اور گندگی کو صاف کرتا ہے ۔
5. **(incidence)** یہ ایک بہت عام بیماری ہے جوکہ ہر ایک لاکھ بندوں میں (2) کو ہوتی ہے ۔
6. **:Transmission**
یہ بیماری ایک سے دوسرے میں ہم بستری سے ماں سے بچے کو خون نوکیلی چیزوں سے لگتی ہے۔
7. **:Persons at risks**
مختلف لوگوں کے ساتھ ہم بستری، گردوں کے مریض، خون لگانے والے سلنڈر ہسپتال اور اسکا عملہ

ٹیسٹ HCV-RNA (PCR) , anti – HCV, LFT,

Prevention

مریض کو الگ کرنے کی ضرورت ہیں۔

نوکیلی چیزیں جیسے کے بلادع، رنزبر کو دوبارہ استعمال نہ کرنا اور انکو طریقے سے ہٹانا (Dispose off) کرنا

condom کا استعمال ۔

Hep-C کیلئے کوئی vaccine نہیں ہے ۔

Treatment

Genotype 1-6	❖ Sofosbuvir 400mg OD- Used in combination with pegylated interferon and ribavirin	Duration 12-24 weeks
Genotype 1-6	❖ Sofosbuvir 400mg OD with daclatasvir	
Genotype 1-6	❖ Sofosbuvir 400mg OD with velpatasvir	
Genotype 2 and 3	❖ Sofosbuvir 400mg OD with ribavirin alone	
Genotype 1- 4	❖ Sofosbuvir 400mg OD with simeprevir	
Genotypes 1, 3, and 4	❖ Sofosbuvir 400mg OD with ledipasvir	

اگر آپ Ribavirin کا استعمال کرتے ہے ۔ (6) مہینوں تک کوئی بھی حمل نہیں ٹھہرانا۔

اگر عمر 65 سے زیادہ ہے تو Ribavirin ← Angina/ stroke کا خطرہ ہے ۔

Response

- ❖ At week 4-----HCV RNA undetected or detectable only at the limit of the quantification. Higher values at this point in time suggest suboptimum adherence.
- ❖ At week 12-----
  - ✓ HCV RNA undetectable or if a greater than 2-log-fold reduction in HCV RNA level is present, therapy should be continued because, according to Fried et al, up to 65% of patients go on to develop a SVR
  - ✓ Conversely, if an early virologic response is not present, treatment should be stopped
- ❖ AT 6 months----
  - ✓ The HCV RNA level should be rechecked 6 months after the completion of treatment;
  - ✓ if HCV RNA is detectable, the patient has had a relapse of the disease and an alternative treatment should therefore be considered.
  - ✓ If HCV RNA is undetectable and test results remain negative, the patient has developed an SVR.

Pregnancy دودھ پلا سکتی ہے ۔ اگر cracked nipple نہ ہو ۔ pregnancy سے پہلے علاج کرنا ہے ۔ ایسی کوئی طریقہ نہیں جس سے بچہ بچایا جاسکتا ہے ۔

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"HIV"

1. تعارف
2. اپنی بیماری کے بارے میں کتنا پتا ہے آپ کو ؟
3.
4. بیماری :

HIV ایک وائرس ہے ۔ جوکہ قوت مدافعت کو کمزور کرتا ہے ۔ باقی وائرس جسم میں آتے ہے اور ختم ہو جاتے ہیں۔ لیکن HIV ہمارے خون میں تمام زندگی رہتے ہیں۔

5. **Epidemiology / incidence**

ایک فیصد سے کم ہے ۔

6. **AIDS**

HIV کی شدید ترین حالت AIDS کہلاتی ہے ۔ جب CD4 <200 سے کم ہوجاتا ہے ۔ AIDS ایک ایسی بیماری ہے جس کو جڑ سے ختم کرنا ممکن نہیں ہے ۔

7. **Transmission**

یہ بیماری ایک سے دوسرے میں ہم بستری سے ماں سے بچے کو خون نوکیلی چیزوں سےلگتی ہے

Diagnosis

اس کی تشخیص کرانے کیلئے مختلف ٹیسٹ کروانے ہونگے جس میں PCR, Western Blot, ELISA یہ شامل ہیں ۔

8. **Treatment**

Start Treatment ← CD4 less than 350

ان میں سے کوئی بھی regimen استعمال کر سکتے ہے

- 2 NRTI + 1 NNRTI
- 2 NRTI + 1 PI (use this regimen in pregnancy)

9. **Pregnancy & HIV**

حملہ ہونے کی صورت میں CD4 count چاہے کتنا بھی دوائیاں شروع کرنی پڑے گی

- 2 NRTI + 1 PI (use this regimen in pregnancy)

Complications

LBW, preterm birth, underweight, transmission (بچے کا وزن کم ہونا ، وقت سے پہلے پیدا ہونا اور مرض کی منتقلی شامل ہے)

Mode of Delivery

- Mode of delivery
  - If viral load < 50 copies/mL= vaginal delivery
  - If viral load > 50 copies/mL= caesarian section
  - Zidovudine infusion = should be started four hours before beginning the caesarean section

- Neonatal antiretroviral therapy
  - If maternal viral load < 50 copies/mL = Zidovudine
  - If maternal viral load > 50 copies/mL = Triple therapy (4- 6 weeks)

بچے کو دودھ نہیں پلا سکتی ۔

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Epilepsy

1. تعارف:
2. آپ اپنی بیماری کے بارے میں کتنا جانتے ہیں ۔
3. کیا آپ جاننا چاہئے گے کہ آپ کو کونسا مرض ہے ۔
4. بیماری :

مرگی ایک ایسی بیماری ہے جس میں دماغ کے اندر مختلف دورانئے کا ایک برقی انتشار پیدا ہوتا ہے ۔ جس کا نتیجے میں کچھ جسمانی علامات ظاہر ہوتے ہیں ۔ اس برقی انتشار کا امکان بار بار ہوتا ہے ۔ اور یہی مرگی کے جھٹکوں کا باعث بنتے ہیں دوائیوں کی مدد سے اسے مکمل طور پر کنٹرول کیا جاسکتا ہے ۔

5. **Incidence / Epidemiology**

Epilepsy 1%لوگوں میں پایا جاتا ہے ۔ 1987 میں پاکستان میں جناح ہسپتال کراچی میں تحقیق کی گئی تھی ۔ جس میں یہ ثابت ہوا کہ پاکستان میں 100 میں سے ایک بندے کو مرگی کا مرض ہے ۔ اور بچوں میں اسکا تناسب دوگنا ہے ۔

6. **Etiology**

(**vitamin –G**) → **V**ascular (stroke/AV malformation), **I**nfection, **T**rauma. **A**utoimmune, **M**etabolic (hyponatremia, hypoxia), **N**eoplasm, **G**enetics & development.

7. **Diagnosis:**

اس کی تشخیص کیلئے مختلف ٹیسٹ کروانے ہونگے ۔ جس میں Electrolytes /EEG/CT- scan / MRI

8. **Types of Epilepsy:**

مرگی کے دو اقسام ہے

(1) چھوٹی مرگی (2) بڑی مرگی

9. احتیاط:

جن لوگوں کی مرگی کنٹرول میں نہی رہتی کار ، موٹر سائیکل وغیرہ نہیں چلانی چاہئے ۔ کیونکہ اگر اس دوران ان کو دورہ آجائے تو نہ صرف خود کو نقصان ہوگا بلکہ دوسروں کو بھی نقصان دے سکتے ہیں وہ لوگ جن کی مرگی ایک سال سے بند ہے وہ لوگ دوائی باقاعدگی سے لے رہے ہیں۔ ان کو گاڑی چلانے کی اجازت دی جا سکتی ہے ۔

10. **مرگی کے دورے کے احتیاطی تدابیر :**

اگر آپ کو لگے کہ اب آپ کو مرگی کا دورہ ہونے والا ہے تو فرش یا بستر پر لیٹ جائے۔ وہ چیزیں ہٹائے جن سے نقصان کا خطرہ ہو پانی یا دوسرے مشروب نہ پلائیں ۔
دانت اور منہ کو ہاتھ سے نہ کھولیں۔

11. **Treatments:**

Lamotrigine, sodium valproate, carbamazepine یہ دوائیوں میں شامل ہے ۔

12. حمل کے دوران :

Carbamazepine & lamotrigine (safe)
Lamotrigine (dose to be Increased)
Breast feeding (Safe)
All should take folic acid.

13. اس کے علاوہ آپ کچھ پوچھنا چاہتے ہیں تو پوچھ سکتے ہیں ۔

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Pregnancy with Epilepsy

1. تعارف
2. آپ کو جھٹکے ابھی ابھی لگ رہے ہیں یا لگتے ہیں ؟
3. اگر نہیں تو کتنے عرصے سے ؟
4. اگر تین سے پانچ سال سے جھٹکے نہیں لگ رہے تو آپ کی دوائیوں کو آہستہ آہستہ کم کر کے بند کرنے کی کوشش کریں گے ۔
5. ایپلپسی کے ساتھ حمل کا ہونا مختلف نوعیت رکھتا ہے ۔ کبھی بغیر کسی مسئلے کے عمل آگے بڑھتا ہے ۔ کچھ خواتین کے جھٹکوں میں کبھی بھی ہو سکتی ہے ۔ اور کچھ میں زیادتی بھی ۔
6. آپ کا عمل کیسا رہے گا اس وقت اندازہ لگانا مشکل ہے ۔
7. آپ کی دواؤں میں ردوبدل کرنا بہت ضروری ہے کیونکہ بعض دوائیاں ہونے والے بچے کے لئے نقصان دہ ثابت ہو تی ہے ۔
8. ان دوائیوں میں سب سے اہم sodium valproate ہے۔
9. ہونے والے بچے میں جھٹکے کی بیماری ہو جانا اس کے بولنے یا چلنے میں دیر ہونا یا پھر اس کی ذہنی صلاحیت کا کم ہوناشامل ہے ۔
10. اگر آپ Sodium valproate لے رہی ہے تو اس کو بند کر کے دوسری دوائی شروع کرنا ہوگی ۔ حمل سے پہلے ۔
11. جب تک دوسری دوائی شروع نہ ہو جائے sodium valproate بند نہ کی جائے تو حمل نہ کریں۔
12. اگر حمل ٹھہر گیا تو دوائی بند نہیں ہو سکے گی ۔
13. دو دوائیاں جو حمل کے دوران محفوظ ہیں ان میں carbamazepine اور Levetiracetam اور lamotrigine کے مضر اثرات کم ہیں ۔
14. ان دوائیوں کے علاوہ folic acid کی گولی بھی شروع کرنی ہوگی ۔ حمل سے دو ماہ پہلے۔
15. حمل کے دوران کچھ خون کے ٹیسٹ کروانے ہوں گے جن سے خون میں دوائیوں کے مقدار کا اندازہ لگایا جائے گا۔
16. یہ ٹیسٹ 6 ہفتے اور 3 مہینے بعد ہوگا۔
17. الٹرا ساونڈ کروانا ہوگا تاکہ بچے کے اعضا کے متعلق معلومات ہو سکے ۔
18. 1 ہسپتال میں نام لکھوانا ضروری ہے ۔
19. کچھ خواتین میں ڈلیوری کے وقت بھی جھٹکے پڑ سکتے ہیں ۔

Extra

- Carbamazepine: Most safe
- Sodium valproate: contraindicated. neural tube defects
- Phenytoin: cleft palate, clotting disorders (give vit k)
- Lamotrigine: dose needs to be ↑ in pregnancy
- All women thinking about becoming pregnant should be advised to take folic acid 5mg per day well before pregnancy to minimize the risk of neural tube defects
- Aim for monotherapy

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Counselling

Rheumatoid Arthritis

1. تعارف:
2. آپ کو اس بیماری کے بارے میں کتنا پتہ ہے ۔
3. اپ کو جوڑوں کی بیماری لاحق ہے ۔
4. **Pathogenesis**

اس مرض کو مجموعی طور پر کوئی وجہ سامنے آئی ۔ لیکن کچھ پیدائشی وجہ ہے جس میں HLADR4 شامل ہے ۔

5. **Incidence:**

عورتوں میں زیادہ علم ہے ۔

40-20 سال کی عمر کی عورتوں میں زیادہ ہوتی ہے ۔

6. **Clinical Feature**

1. جوڑوں میں درد ، سوجن اور اکڑ پن شامل ہے ۔
2. یہ اکڑ پن صبح کے وقت زیادہ ہوتا ہے اور ۳۰ م سے زیادہ ہوتا ہے ۔
3. یہ بیماری ہاتھوں کے ٹیڑے پن کی وجہ بن سکتی ہے ۔
4. یہ nerve کے بند ہونے کا باعث بھی بن سکتے ہیں۔ جس کو carpel tunnel بیماری بھی کہتے ہیں۔
5. یہ گردن کے مہروں کی بیماری کا بھی سبب بن سکتا ہے ۔
6. یہ جسم میں گھٹلیوں کا باعث بھی بن سکتا ہے ۔
7. انکھوں اور منہ کے خشک ہونے کا بھی سبب بن سکتا ہے ۔
8. اسکے علاوہ پھیپھڑوں ، دل کی بیماری اور دوسری بیماری کی وجہ بھی بن سکتی ہے ۔

7. **Diagnosis:**

مرض کی تشخیص کیلئے کچھ خون کے ٹیسٹ کرانے پڑتے ہیں جس میں ESR, CRP, Ant CCP, ANA, RA factor کے ٹیسٹ شامل ہے ۔ اسکے علاوہ U/S اور MRI کی ابھی ضرورت پڑ سکتی ہے ۔

8. **Aim of Rx to reduce inflammation, pain & deformity**

وقتی طور پر درد سے نجات کیلئے NSAIDS استعمال کرتے ہیں ۔ اسکے ساتھ (DMARDS) استعمال کر سکتے ہیں۔ Steroids (prednisolone) شروع میں استعمال یا علامات زیادہ ہونے کی صورت میں استعمال کرتے ہونگے

<table>
<tr>
<td>Management of Rheumatoid Arthritis</td>
<td>
❖ <u>Initial therapy: (NICE guidelines 2009)</u>
○ Patients with newly diagnosed active RA start a combination of DMARDs (including methotrexate and at least one other DMARD), plus short-term glucocorticoids
❖ <u>DMARDs:</u>
○ Methotrexate is the most widely used DMARD.
▪ Pregnancy:
✓ Women should avoid pregnancy for at least 3 months after treatment has stopped
✓ BNF also advises that men using methotrexate need to use effective contraception for at least 3 months after treatment
▪ Prescribing methotrexate:
✓ Methotrexate is taken weekly, rather than daily
✓ Check CBC, RFTs & LFTs before starting treatment and repeated weekly until therapy stabilized, thereafter patients should be monitored every 2-3 months
✓ Folic acid 5mg once weekly should be co-prescribed, taken more than 24 hours after methotrexate dose
✓ The starting dose of methotrexate is 7.5 mg weekly (source: BNF)
○ Sulfasalazine
○ Leflunomide
○ Hydroxychloroquine
❖ <u>TNF-inhibitors: (can cause Drug induced lupus)</u>
○ The current indication for TNF-inhibitor is an inadequate response to at least 2 DMARDs including methotrexate.
○ It includes
✓ Etanercept: (can cause demyelination & reactivation of TB), infliximab
❖ Other important treatment options include analgesia, physiotherapy and surgery.
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Needle Stick Injuries

تعارف :

میرا نام ڈاکٹر --------- ہے ۔ میں آپکے علاج معالجے کی ٹیم کا حصہ ہوں ۔

آپکا نام ؟

1. کیا آپ بتا سکتی ہے کہ یہ سب کیسے ہوا؟
2. آپ گھبرائیں نہیں اور کچھ سوالات کے جوابات دیں۔
3. کیا آپ نے Gloves پہنے ہوئے تھے ؟
4. سوئے (Needle) جو آپ کو چبھی وہ چھوٹی تھی یا بڑی
5. خون تو نہیں نکلا؟
6. اس طرح کے حادثات میں HIV / Hep-C / Hep-B لگنے کے چانس ہوتے ہیں ۔
7. کیا مریض کو HIV / Hep-C / Hep –B تشخیص ہو چکا ہے ۔ اگر HIV تھا تو کیا AIDS بھی ہے ۔
8. آپ پریشان نہ ہو اگر مریض کے ٹیسٹ نہیں ہوئے تو ہم ہسپتال والوں سے بھی بات کریں گے کہ مریض کے HIV / Hep –C / Hep-B ٹیسٹ کروائیں۔
9. ایسے وقت میں صابن کے پانی سے دھونا چاہئے جہاں پہ سوئی لگی ہو ۔ رگڑنا نہیں ہے ۔
10. کیا آپ کو Hep – B کے vaccine لگے ہے۔
11. اگر Hep – B کے vaccine نہیں لگے تو HBIG لگائیں گے اور ساتھ میں Hep –B کی vaccination
12. Anti-retroviral جس میں (3) دوائیاں شامل ہے۔ For HIV

a. **Zidovudine+ Lamivudine + Lopinavir/Ritonavir for 4 weeks**
b. Start within 1-2 hours but may be started up to 72 hours
c. Serological testing at 12 weeks following completion of post-exposure prophylaxis
d. Reduces risk by 80%

13. مجھے اندازہ ہے آپ (4) ماہ اُمید سے بھی ہے ۔ (if pregnant)
14. اس تمام عرصے میں آپ کی بات راز رکھی جائیگی۔
15. ہم آپکے gynecologist سے بھی کریں گے اور ان کو صورتحال سے آگاہ کرے گے۔

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Smoking Cessation

تعارف :
میرا نام ڈاکٹر --------- ہے ۔ میں آپکے علاج معالجے کی ٹیم کا حصہ ہوں ۔
آپکا نام ؟

(1) ASK:
کیا آپ سگریٹ پیتے ہیں ؟
آپ کتنے سگریٹ پیتے ہیں ؟
کب سے پی رہے ہیں؟

(2) Advise
میرا خیال ہے یہ بہتر ہے کہ آپ سگریٹ پینا چھوڑ دیں۔ ابھی اس سے پہلے کر بہت دیر ہو جائے ۔
اس سے آپ کی صحت بہتر بنا سکتے ہیں ۔ اور اچھی اور صحت مند زندگی گزار سکتے ہیں۔

- سگریٹ کہ کیسز جس میں پھیپھڑوں کا معدہ کا اور منہ کا کینسر فالج
- خون کی شریانوں کا تنگ ہونا جو کہ stroke, heart attack (فالج) کا باعث بن سکتا ہے ۔
- پھیپھروں کا سکڑنا
- پاؤں اور ہاتھوں کی انگلیوں کا نیلا پڑنا۔
- سگریٹ نوشی بے اولادی کا بھی باعث بنتی ہے ۔

Attempt: (3)
کیا آپ سگریٹ چھوڑنا چاہتے ہیں ہم آپکے سگریٹ چھوڑنے میں مدد کریں گے ۔

(4) Assist:
سگریٹ پینے والی جگہوں سے دور رہے ۔ دوستوں کو انکار کرلے اگر وہ سگریٹ پلانا چاہتے یا ہوسکے تو اُن کی صحبت سے دور رہے ۔

Treatment: (5)
سگریٹ چھوڑنے کیلئے دواؤں کا سہارا بھی لیا جاسکتا ہے ۔ جیسے کہ varenicline , Bupropion , nicotine patches, nicotine gums
آپ کو جھٹکوں کی بیماری یا مرغی کی کوئی تکلیف تو نہیں ہے ۔
کوئی اور نشہ آور یا دماغ کو سکون پہنچانے والی دوائیاں تو استعمال نہیں کرتے ۔
ہم آپکو سگریٹ نوشی چھوڑنے کیلئے ایک کتا بچہ بھی دیں گے جس کو پڑھ کر آپکو سمجھنا اور آسان ہو جائیگا۔
اگر آپ کو کوئی سوال پوچھنا ہو تو آپ پوچھ سکتے ہیں ۔

شکریہ

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COVID-19 Counselling

1. اسلام اعلیکم میرا نام ڈاکٹر ---------- ہے . میں آپ کے علاج معالج ٹیم کا حصہ ہوں۔ آپکا نام ؟
2. میں آج اپکو آپکی بیماری کے بارے میں آگاہی دوں گی . آپ اس گفتگو میں کسی اور رشتے دار کو شامل کرنا چاہیں گے؟
3. آپ اپنی بیماری کے بارے میں کیا جانتے ہیں ؟
4. آپ کی رپورٹ کا رزلٹ آگیا ہے . آپکے جسم میں کورونا وائرس کی تشخیص ہوئی ہے .
5. آپ کو رونا وائرس کے بارے میں کیا جانتے ہیں ؟ کیا کسی نے آپکو پہلے آپکی اس رپورٹ سے آگاہ کیا ہے ؟
6. جیسا کہ آپ جانتے ہیں یہ ایک ایسا وائرس ہے . جس نے دنیاوی سطح پر لاکھوں اور کڑوروں لوگوں کو متاثر کیا ہے . آپ کے اپنے ملک میں 4 سے زائد لاکھ لوگ اس بیماری کا شکار ہو چکے ہیں اور ہزاروں افراد انتقال کر گئے ہیں .
7. لیکن یہ ایک ایسا وائرس ہے . جس کا ہر مریض کے جسم پر متاثر ہونے کی نوعیت الگ ہے .
8. کچھ مریض میں اس کی کوئی علامت ظاہر نہیں ہوتی ہیں اور کچھ مریضوں میں بخار، سوکھی کھانسی جیسی علامت اور کچھ میں سونگھنے اور چکھنے جیسی صلاحیت کا ختم ہونا ، سانس میں دشواری ، جسم میں درد ، گلے میں درد شامل ہیں
9. یہ وائرس قریبی تعلقات جیسے کسی متاثرہ شخص کے کھانسنے سے ، بات کرنے سے ، چھینکنے سے یا کوئی بھی عمل جس سے متاثرہ شخص کے سانس کے زرات سے واسطہ ہو۔ یہ پھیل سکتا ہے .
10. اس لئے متاثرہ شخص کو بہت احتیاط کی ضرورت ہے . آپ کو کچھ عرصے تک ایک الگ کمرے میں رہنا ہے . اپنے کھانے کے برتن الگ کرنے ہیں . اپنے استعمال کی برتنے کو باقی گھروالوں سے دور رکھنا ہے .
11. باقی گھر والے بھی رش والی جگہوں پر جانے سے پرہیز کریں ، ماسک پہن کر گھر سے نکلیں ، ہاتھوں کو بار بار 20 سیکنڈ تک پانی سے دھوئیں
12. متاثرہ شخص کو اس عرصے میں اپنی غذا کا خاص خیال رکھنا ہے .
13. پانی کا استعمال زیادہ سے زیادہ کرنا ہے .
14. بخار کے لئے panodol لینی ہے -
15. قوت مدافیت کے نظام کو بہتر رکھنے کے لئے کچھ وٹامن کی گولیاں ہم آپ کو دیں گے وہ بھی با قاعدگی سے آپ نے لینی ہے .
16. Oxygen چیک کرنے کا اعلیٰ (Pulse Oxi) آپ نے لینا ہے - جس بھی وقت آپ سانس کی دشواری محسوس کریں ، آپ نے اپنی Saturation (Oxygen)کی مقدار چیک کرنی ہے .
17. 92% سے کم ہونے کی صورت میں یا سانس کی دشواری کی صورت میں فورن ڈاکٹر سے رجوع کرنا ہے .
18. اگر خدا نخواستہ کسی بھی وقت آپکو سانس میں تکلیف ہوتی ہے یا آپ کے سینے کے X-ray میں باقاعدہ تبدیلیاں آتی ہیں ، ہمیں آپکو کچھ دوائیاں شروع کرنی پڑیں گی اور ہسپتال میں Oxygenفراہم کرنی ہوگی .
19. جس میں ایک وائرس کے خلاف کام کرنے والی Remdesivir ہے جو پانچ ہزار تک کا ایک دن کا Injection ہے -
20. اور ایک Tocilizumab نامی دوا ہے - جو مہنگی دوا ہے ، ایک دن کا انجیکشن اسے 1.5 لاکھ روپے تک کا ہے -
21. امید کرتے ہیں کہ آپ کی بیماری کا یہ دورانیہ بغیر کسی سنجیدگی کے گزر جائے گا .
22. یہ بیماری پھیپھڑوں کا Pneumonia، دل و دماغ کو بھی متاثر کر سکتی ہے .
23. بیماری کی شدت بڑھنے پر اس میں Steroids بھی استعمال کئے جاتے ہیں اور خون کو پتلا رکھنے کی دوائیں بھی دی جاتی ہیں اور مصنوعی سانس کی مشین پر بھی ڈالا جاسکتا ہے .
24. میں جانتی ہوں یہ آپکے لئے ایک مشکل اور تکلیف دہ وقت ہے . لیکن آپ نے ہمت رکھنی ہے .
25. اپنا خیال رکھنا ہے اور اپنے گھر والوں کی حفاظت کرنی ہے -
26. کوئی سوال جو آپ کرنا چاہیں گے ؟
27. اوکے، بہت شکریہ . اللہ حافظ

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Station
History Taking

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جوڑوں میں درد(Joint Pains)

- آپ کے کن جوڑوں میں درد ہے ؟
- کتنی دیر سے درد ہے؟ اور کتنی دیر کے لیے ؟
- درد کی شدت کتنی ہے ؟
- رات کو بھی درد ہوتی ہے ؟
- جوڑ سوجتے بھی ہیں ؟ لال بھی ہو جاتے ہیں ؟
- صبح کے وقت جوڑ سخت تو نہیں ہو جاتے ، اگر سخت ہوتے ہیں تو کتنی دیر کے لئے سخت ہوتے ہیں
- درد کی وجہ سے روز مرہ کے کاموں میں دقت نہیں ہوتی اور ایسے تو نہیں ہوتی ہے ۔ ایک جوڑ میں شروع ہوئی ہو اُس میں ٹھیک ہو جاتی ہو پھر دوسرے جوڑ میں شروع ہو جائے ۔
- درد کے ساتھ بخار تو نہیں ہوتا ؟ تھکاوٹ تو نہیں رہتی ، وزن میں کمی تو نہیں آئی ؟
- جوڑوں کو حرکت دینے پر آوازیں تو نہیں آتی؟
- جسم پر لال رنگ کے دانے تو نہیں بنتے منہ میں چھالے تو نہیں نکلتے ، پیشاب کی جگہ یہ چھالے بنتے ہوں ، بال گچھوں میں گرتے ہوں ، آنکھوں میں رگڑ محسوس ہوتی ہو۔ چہرے پر دھوپ چبھتی ہو۔
- ان دنوں میں پیٹ خراب تو نہیں ، چھوٹے پیشاب میں جلن یا درد، خون یا پیپ تو نہیں آئی ، گلاب خراب تو نہیں ہوا۔ کوئی غیر ازدواجی جسنی تعلقات تو نہیں ہیں۔
- خاندان میں کسی کو گینٹھیا، یا جوڑوں کے درد کے ساتھ گردے میں پتھری کی شکایت تو نہیں ۔ یا آپ کو جوڑوں کے گرد گلٹیوں کا یا گردے میں پتھری کا مسئلہ تو نہیں۔
- جوڑوں کے درد کے لیے دوا کیا لے رہے ہیں ؟ کوئی ایسی دوا تو نہیں استعمال کی کہ جس کے بعد یہ درد شروع ہوا ہو ۔ درد کی دواؤں سے پیٹ میں درد تو نہیں ہوتا ، جلن تیزابیت تو نہیں رہتی ، پیشاب کم تو نہیں ہوا؟
- کام کیا کرتے ہیں ؟ کھیلوں میں حصہ لیتے ہیں ۔
- کھانا نگلنے میں مسئلہ تو نہیں ہوتا ۔
- جلد سخت تو نہیں ہو گئی۔ منہ کھولنے میں دقت تو نہیں ہوتی ؟
- ٹھنڈے پانی میں ڈالنے سے ہاتھ نیلے تو نہیں ہو جاتے ؟
- بیٹھ کر اُٹھنے میں مسئلہ تو نہیں ہوتا ، بالوں میں کنگھی کرنے میں مسئلہ تو نہیں ہوتا ؟
- گرد سوجی تو نہیں، سردی یا گرمی تو زیادہ نہیں لگتی ؟ ہاتھوں میں کپکپی تو نہیں آتی ، قبض کی شکایت تو نہیں رہتی ؟

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بخار (Fever)

ایک دم سے تیز بخار ہوا ہے یا آہستہ آہستہ بخار بڑھتا گیا ہے ؟

- Grade کتنا بخار ہوتا ہے ؟ تھرمامیٹر سے چیک کیا ہے - high grade fever > 102°F
- Pattern مسلسل بخار رہتا ہے یا درمیان میں کم بھی ہو جاتا ہے ؟ کتنا کم ہوتا ہے ؟ ایک دن میں کئی بار اتر تا چڑھتا ہو (Quotidian fever)
- ایک دن چھوڑ کر ہوتا ہو Tertian fever دو دن چھوڑ کر ہوتا ہو (Quartan fever)
- آٹھ یا دس دن لگا تار بخار ہوتا ہو اور پھر سات آٹھ دن کے لیے ٹھیک ہو جاتا ہو (Pel-Ebstein fever)
- بخار کے ساتھ سردی یا کپکپی لگتی ہے ؟
- بخار کے ساتھ سر میں شدید درد ہو، آنکھوں میں روشنیاں چبھتی ہوں یا گرد اکڑ گئی ہو۔ (meningitis)
- کانوں سے ریشہ تو نہیں آتا ۔ (otitis)
- چہرے پہ درد تو نہیں ہوتی ؟ (Sinusitis)
- گلے میں درد تو نہیں ہوتی؟ (Sorethroat)
- گلا سوجا تو نہیں ہے ؟ گرمی زیادہ تو نہیں لگتی ، ہاتھوں میں پسینہ آتا ہو ، انگلیوں میں لرزش ہوتی ہو (Thyrotoxic fever)
- کھانسی کے ساتھ بلغم تو نہیں آتی ؟
- سینے میں درد تو نہیں ہوتی ، دل کی دھڑکن تیز یا بے تر تیب ہوتی ہو، سانس خراب ہوتا ہو؟ (infective endocarditis)
- پیٹ میں دائیں طرف درد تو نہیں ہے، آنکھیں جسم پیلا تو نہیں ہوگیا؟
- پتلے بخار تو نہیں لگے ہوئے یا قبض تو نہیں ہے ؟
- کمر میں گردوں والی جگہ پر درد تو نہیں ہے ؟ چھوٹے پیشاب میں جلن ، خون یا پیپ تو نہیں آتی یا پتھری تو نہیں نکلی ۔
- بخار کے ساتھ جوڑوں میں درد یا سوجن تو نہیں ہوتی۔ جسم یا لال نشان پڑتے ہوں منہ میں چھالے بن جاتے ہوں ۔ بال گچھوں میں گرتے ہوں۔ دھوپ چبھتی ہو، آنکھوں میں رگڑ محسوس ہوتی ہو؟
- وزن تو نہیں کم ہوا؟ جسم میں گلٹیاں تو نہیں نکل آئیں۔ چلتے ہوئے آنکھوں کے آگے اندھیرا آجاتا ہو، دل کی دھڑکن بڑھ جاتی ہو۔ جسم کے کسی حصے سے خون آتا ہو، جسم پر لال لال چھوٹے یا نیلے رنگ کے بڑےنشان پڑ جاتے ہوں ؟
- کبھی شعاعیں تو نہیں لگی ، کیمیکل کی فیکٹری میں کام تو نہیں کیا.
- Chemo تو نہیں لگی ، کوئی اور ایسی دوا تو نہیں استعمال کی جس کے بعد بخار اور علامات آنا شروع ہو گئی ہوں ؟
- آپ کو یا آپ کے خاندان میں کسی کوٹی بی کی شکایت ہو؟
- آپ نے ملک سے باہر سفر کیا ہوں ؟ غیر ازدواجی جنسی تعلقات تو نہیں رہے ۔ نشے کے ٹیکے تو نہیں لگاتے رہے یا نشے کے لیے دوسروں کی سوئیاں تو نہیں استعمال کرتے رہے ؟ جسم پر نشان کھدوائے ہوں ، خون لگوایا ہو، کوئی دانتوں یا جسم کا آپریشن ہوا ہو؟
- گھر میں جانور یا پرندے تو نہیں رکھے ہوئے؟
- بغیر ابلا کچا دودھ تو نہیں استعمال کرتے ؟
- ماہواری کیسی آتی ہے ؟ اُس میں کوئی پیچیدگی تو نہیں ؟ خون زیادہ تو نہیں آتا ؟
- کسی مچھر یا کیڑے نے تو نہیں کاٹا ؟
- بچپن میں ویکسین لگی تھی ؟

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(Diabetes mellitus) شوگر

- شوگر آپ کو کب سے ہے ؟ کتنی عمر میں ہوئی تھی ؟
- کیسے پتہ چلا تھا شوگر کا ؟کیا علامت تھیں ، کیا پیاز زیادہ لگتی تھی ، بھوک زیادہ لگتی تھی ، پیشاب بار بار اتا تھا ؟
- شوگر کا کنٹرول کیسا تھا ؟ کھانے کے بعد کتنی شوگر ہوتی ہے ؟
- ناشتے سے پہلے کتنی ہوتی ہے ؟ HbAIC آخری بار کتنا تھا ، کو لیسٹرول کتنا ہے ؟
- شوگر کے لی کیا دوائی لے رہے ہیں ؟ اس سے شوگر کنٹرول ہے ؟
- دوائی باقاعدگی سے لیتے ہیں ؟ دوائی میں کبھی ناغہ تو نہیں کیا ؟
- دوا میں کوئی تبدیلی تو نہیں ہوئی ، انسولین تو نہیں لگا رہے ؟
- اگر انسولین لگاتے ہیں تو کیوں شروع کی ، شوگر کنٹرول نہیں ہوتی تھی یا بہت زیادہ بڑھ گئی تھی اور بے ہوشی یا غنودگی میں چلے گئے ؟
- انسولین کون سی لگاتے ہیں ؟
- کتنی مقدار میں لگاتے ہیں ؟ کسی جگہ پر لگاتے ہیں ، خود لگاتے ہیں ؟ دن میں کتنی بار لگاتے ہیں ؟
- شوگر کبھی کم تو نہیں ہوئی ؟ کتنی کم ہوئی تھی ، کتنی بار کم ہوتی ہے ؟ کیا کم ہونے کا پتہ چل جاتا ہے ؟ کیا علامات آتی ہیں ؟

Macro vascular complications

- کبھی دل کا اٹیک تو نہیں ہوا؟
- کبھی فالج کا اٹیک تو نہیں ہوا ؟
- کبھی ٹانگ میں چلتے چلتے شدید درد تو نہیں ہوئی اور وہ نیلی پڑگئی ہو؟ جو آرام کرنے پر یا رُکنے پر ٹھیک ہو جاتی ہو۔

Microvascular complications

Neuropathy

- ہاتھ یا پیر سن تو نہیں ہوتے ۔ پاؤں میں جوتے کا پتہ چل جاتا ہے ۔ کبھی چلتے چلتے جو تا اتر تو نہیں جاتا۔ ٹھنڈے گرم کا پتہ چل جاتا ہے ۔

کھانا کھاتے ہوئے پسینہ آتا ہے ۔ دل کی دھڑکن تیز ہوتی ہے ۔ ازدواجی تعلقات میں مسائل تو نہیں درپیش ۔
کھڑا ہونے پر آنکھوں کے آگے اندھیرے اتو نہیں آجاتا ۔
قبض تو نہیں رہتی ۔ پتلے پاخانے تو نہیں لگتے ۔

Nephropathy

پیشاب کی مقدا کم تو نہیں ہوئی ۔ چھوٹے پیشاب پر جھاگ تو نہیں آتی ، پیشاب نکل تو نہیں جاتا۔ پیشاب میں پتھری تو نہیں نکلتی ۔

Retinopathy

نظر تو کمزور نہیں ہوگئی ؟ آنکھوں میں کبھی موتیاں تو نہیں اترا۔ آنکھوں میں نظر کی کمزوری کے لیے لیزر تو نہیں لگا کبھی ۔
بلڈ پریشر تو نہیں بڑھا ہوا؟
پیروں میں کبھی زخم تو نہیں بگڑا ؟
خاندان میں کسی کو شوگر کا مسئلہ ہے ؟ کبھی دوران حمل شوگر زیادہ ہوئی ؟
کوئی ایسی دوائیاں تونہیں لیں جن سے شوگر بڑھ گئی ہو۔ Thiazides, steroids

Social history

سگریٹ پیتے ہیں ؟ کیا کام کرتے ہیں ؟ ورزش کرتے ہیں ؟ وزن کم کیا ہے ؟ پرہیز کرتے ہیں ؟

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Chronic Diarrhea

- موشن کب سے لگے ہیں ۔ روزانہ کتنے موشن آتے ہیں ۔
  موشن بہت بڑی مقدا میں ایک دفعہ آتا ہے - (Small Gut Diarrhea)
  یاتھوری تھوڑی مقدار میں بار بار آتے ہیں - (large Gut Diarrhea)
- موشن کس طرح کے ہیں ۔ پانی والے یا اس میں چکنائی وغیرہ ہوتی ہے ۔ کموڈ میں چپک جاتے ہوں ، آسانی سے فلش نہ ہوتے ہوں ، بہت بد بودار ہوں (Malabsorption)
  کھانا پینا بند کرنے سے موشن آنا بند ہو جاتے ہیں۔ (Osmotic Diarrhea)
  یا کھانا چھوڑنے سے کوئی فرق نہیں پڑتا موشن اسی طرح آتے رہتے ہیں۔ (Secretory Diarrhea)
- روٹی یا دودھ چھوڑنے سے موشن میں کوئی فرق پڑتا ہے - (Coeliac Disease, Lactose intolerance)
  رات کو موشن کے لیے اٹھنا پڑتا ہے ۔ (Organic Diarrhea)
- ایسا تو نہیں ہوتا کبھی موشن لگ جاتے ہوں ، کبھی قبض ہو جاتی ہو۔ ساتھ پیٹ میں در د ہتا ہو جو موشن کرنے سے بہتر ہو جاتا ہو۔
  IBS
  موشن کے ساتھ خون یا چربی (Mucus) تو نہیں آتی ۔ ساتھ پیٹ میں درد رہتا ہو، بخار رہتا ہو۔ ایک بار پاخانہ کرنے کے بعد محسوس ہو رہا ہو کہ پاخانہ آرہا ہے مگر پاخانہ نہ آتا ہو۔ (Tenesmus) IBD
- موشن کے ساتھ معدے میں جلن تیزابیت تو نہیں رہتی - (Zollinger Ellison syndrome)
  پیٹ کے اوپر والے حصے میں در د رہتا ہو جو پیچھے کمر میں جاتا ہو۔ (Ch. Pancreatitis) پتے میں کبھی پتھری کا مسئلہ رہا ہو۔
  پتے یا جگر کی سرجری ہوئی ہو ۔ ساتھ آنکھیں پیلی ہوگئی ہوں۔ (Hepatobiliary system disease)
- انتڑیوں کا آپریشن تو نہیں ہوا۔ شوگر تو نہیں ہے ۔ (Bacterial Over growth) ، جلد سخت ہوگئی ہو، منہ پورا نہ کھلتا ہو۔ سردی میں ٹھنڈے پانی میں ہاتھ ڈالنے سے ہاتھ نیلے ہو جاتے ہوں۔ (Scleroderma)
- جوڑوں میں درد رہتا ہو ، منہ میں یا پاخانے والی جگہ پر چھالے بنتے ہو۔ (extra intestinal symptoms)
- آنکھوں میں رگڑ محسوس ہوتی ہو، گرد ے میں پتھری بن گئی ہو۔ (IBD) یا جوڑوں میں درد
- موشن لگنے سے پہلے اینٹی بائیوٹک استعمال کی ہوں ۔ معدے کی جلن کی دوائیاں استعمال کی ہوں۔ کوئی قبض کشا دوا مستقل استعمال کر رہے ہوں۔
- وزن تو کم نہیں ہوا۔ بخار تو نہیں رہتا جو شام میں بڑھ جاتا ہو ۔ پسینے آتے ہوں ، پہلے کبھی ٹی بی کی شکایت رہی ہو۔ خاندان میں کسی کو ٹی بی کی شکایت ہو۔
- جسم میں گلٹیاں تو نہیں نکلیں ۔ وزن بہت زیادہ کم تو نہیں ہوا۔ پاخانے کے ساتھ خون آتا ہو ، کبھی موشن لگ جاتے ہو یا کبھی قبض ہو جاتی ہو - (CA Colon in old patients)
- گلا تو نہیں سوجا، ہاتھوں میں کپکپی آتی ہو۔ Endocrine crisis پسینہ آتا ہو یا پریشانی رہتی ہو۔ Hyperthyroidism
- سینے میں جکڑن ہو جاتی ہو یا چہرہ لال ہو جاتا ہو۔ (Carcinoid syndrome)
- بلڈپریشر کم رہتا ہو۔ جلد کالی ہوگئی ہو۔ ہاتھوں کی لکیریں کالی ہوگئی ہوں ۔ منہ اندر سے کالا پڑگیا ہو۔ (Addison's Disease)
- ملک سے باہر سفر کیا ہو ، نشے کے ٹیکے لگواتے رہے ہوں۔ غیر ازدواجی جنسی تعلقات ہوں۔ جسم پر نشان کھدوانے ہوں۔ کوئی آپریشن ، دانتوں کا علاج کروایا ہو۔ (HIV)
- سگریٹ پیتے ہیں۔ (Risk Factor CA colon)
- شراب پیتے ہوں۔(Risk factor for Ch. Pancreatitis)
- کبھی پیٹ میں شعاعیں تو نہیں لگیں ۔ گھر می کسی اور کو بھی تو موشن نہیں لگے ہوئے ۔

Complication Deficiency of vitamins (A, D, E, K) B12, Folate Deficiency

- رات کو نظر آنا کم تو نہیں ہوگیا ۔
- جلد کھردری اور سخت ہوگئی ہو۔
- ہڈیوں ، پٹھوں میں درد رہتا ہو۔
- مسوڑھوں سے یا جسم کے کسی حصے سے خون آتا ہو۔
- چلتے جاتے لڑکھڑا جاتے ہوں۔ پیر، ٹانگیں اور ہاتھ سن رہتے ہوں۔ زبان پر مرچیں بہت زیادہ لگتی ہوں۔ (Glossitis)

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THE END

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